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November 13, 2006

Song Her, Clerk
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100



Re: *Comments of the San Luis & Delta-Mendota Water Authority on the Draft 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*

Dear Ms. Her:

On September 29, 2006, the State Water Resources Control Board ("State Water Board" or "SWRCB") issued a Notice of Public Hearing, Consideration of an Amended Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, dated September 2006 ("Draft 2006 Bay-Delta Plan"). The Notice authorized the submittal of written comments on the Draft 2006 Bay-Delta Plan. Pursuant to that authority, the San Luis & Delta-Mendota Water Authority ("Authority"), on behalf of its member agencies, submits this comment letter.

The Authority, formed in 1992, consists of 32 member public agencies,¹ each of which

¹ The member agencies of the Authority are: Banta-Carbona Irrigation District; Broadview Water District; Central California Irrigation District; Centinella Water District; City of Tracy; Columbia Canal Company; Del Puerto Water District; Eagle Field Water District; Firebaugh Canal Water District; Fresno Slough Water District; Grassland Water District; James Irrigation District; Laguna Water District; Mercy Springs Water District; Oro Loma Water District; Pacheco Water District; Pajaro Valley Water Management Agency; Panoche Water District; Patterson Water District; Plain View Water District; Pleasant Valley Water District; Reclamation District 1606; San Benito County Water District; San Luis Canal Company; San Luis Water District; Santa Clara Valley Water District; Tranquillity Irrigation District; Turner Island Water District; West Side Irrigation District; West Stanislaus Irrigation District; Westlands Water District; and Widren Water District.

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contracts with the United States Department of the Interior, Bureau of Reclamation ("Reclamation"), for supply of Central Valley Project ("CVP") water. (See Appendix 2 to the Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Appendix 2"), Exhibits SLDM-07.)² The Authority's member agencies are entitled to approximately 2.5 million acre-feet of water for agricultural lands within the western San Joaquin Valley, San Benito County, and Santa Clara County, California. (*Id.*) Authority members also supply water for municipal and industrial uses, including the delivery of approximately 150,000 and 200,000 acre-water to the Silicon Valley, and provide approximately 250,000 to 300,000 acre-feet of water for waterfowl and wildlife habitat in the San Joaquin Valley. (*Id.*) In addition, the Authority operates and maintains certain CVP facilities under contract with Reclamation. (*Id.*) Two such facilities are the Tracy Pumping Plant, located in the southern portion of the Delta, near the city of Tracy, and the Delta-Mendota Canal, which is used to deliver water from the Tracy Pumping Plant to the Authority's member agencies. (*Id.*)

For the past several years, the Authority participated in and presented recommendations during the workshop that followed the periodic review of the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("1995 Bay-Delta Plan").³ Although the Draft 2006 Bay-Delta Plan reflects some of the Authority's recommendations, several significant proposals made by the Authority were dismissed. With this letter, the Authority presents two general comments on the Draft 2006 Bay-Delta Plan and respectfully requests that the State Water Board reconsider the decisions to dismiss those certain recommendations made by the Authority. These comments are intended to complement, not supplant, prior comments of the Authority.

General Comments

1. **Basis For Objectives**

The Draft 2006 Bay-Delta Plan relies heavily upon statements made and the objectives established in the 1995 Bay-Delta Plan. It, however, provides little support for those statements and few bases for the conclusions that the objectives remain necessary to

² All references to exhibits, unless otherwise noted, are to the exhibits referenced in Appendix 2.

³ The Authority attaches hereto copies of exhibits referenced in Appendix 2 that are most relevant to the comments presented in this letter.

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"ensure the reasonable protection of beneficial uses and the prevention of nuisance."
(Water Code, § 13241.) For example, the Draft 2006 Bay-Delta Plan states:

Unlike water quality objectives for parameters such as dissolved oxygen, temperature, and toxic chemicals, which have threshold levels beyond which adverse impacts to the beneficial uses occur, there are no defined threshold conditions that can be used to set objectives for flows and project operations. Instead, available information indicates that a continuum of protection exists. Higher flows and lower exports provide greater protection for the bulk of estuarine resources up to the limit of unimpaired conditions. Therefore, these objectives are set based on a subjective determination of the reasonable needs of all the consumptive and nonconsumptive demands on the waters of the Estuary.

(Draft 2006 Bay-Delta Plan, p.10.) Those statements are taken directly from the 1995 Bay-Delta Plan. (1995 Bay-Delta Plan, pp.14-15.) If those statements are not changed to reflect the fact that they are based on information available in 1995, the administrative record for the Amended Bay-Delta Plan must include information to support them. That is true for all statements made and all objectives adopted in the Amended Bay-Delta Plan. By this comment, the Authority does not suggest data or policy necessarily supports changes. Instead, if the Amended Bay-Delta Plan includes statements or objectives unchanged from those contained in the 1995 Bay-Delta Plan, the State Water Board must explain why those statements and objectives, and presumably data and policy used to support them, remain relevant.

2. Clear Program of Implementation

The Program of Implementation established in the Draft 2006 Bay-Delta Plan contains extensive amounts of superfluous information. In particular, much of the Program of Implementation discusses how the 1995 Bay-Delta Plan has been implemented. (See Draft 2006 Bay-Delta Plan, pp. 21–end.) For example, the Draft 2006 Bay-Delta Plan provides:

The DWR and USBR have an ongoing responsibility to comply with the municipal and industrial, agricultural, and fish and wildlife objectives pursuant to the terms and conditions in their permits and licenses. . . . Under their water right permits and license, the DWR and the USBR currently are required to comply with these objectives on an interim basis

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until the State Water Board adopts a further decision re-assigning responsibility for meeting these objectives.

(Draft 2006 Bay-Delta Plan, p. 21.)⁴ Those types of statements are not relevant to the Program of Implementation and will only cause confusion if and when the Amended Bay-Delta Plan is implemented and/or requires interpretation. As section 13242 of the Water Code provides: "The program of implementation for achieving water quality objectives shall include, but not be limited to: (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private; (b) A time schedule for the actions to be taken; (c) A description of surveillance to be undertaken to determine compliance with objectives." (Water Code, § 13242.) The Program of Implementation in the Amended Bay-Delta Plan should be so focused.

Specific Comments

1. Chloride Objectives

During the workshop that preceded the Draft 2006 Bay-Delta Plan, the Authority, the State Water Contractors ("SWC"), Reclamation, and the Department of Water Resources ("DWR"), each requested that the State Water Board add a new compliance location in Old River, near Holland Tract.⁵ The Authority did not nor does it here request the addition of a compliance point because it necessarily objects to the chloride objectives established in the 1995 Bay-Delta Plan. Rather, an additional compliance point in Old River, near Holland Tract is proposed to provide greater options to the State Water Board when implementing the Draft 2006 Bay-Delta Plan.

Currently, a compliance point for the chloride objectives exists at the end of Rock Slough, at Pumping Plant No. 1 on the Contra Costa Canal. (Appendix 1 to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Appendix 1", p. 37.) The State Water Board adopted the chloride objectives and established that compliance point in or before 1978. (Exhibit DWR-13, p. 2.) At the time, the Contra Costa Water District ("CCWD") relied heavily on water diverted at Pumping Plant No. 1. (*Id.*) Therefore, water quality at Pumping Plant No. 1 was

⁴ Notwithstanding their relevance, those statements, and others contained in the Draft 2006 Bay-Delta Plan, inaccurately characterize how the State Water Board implemented the 1995 Bay-Delta Plan.

⁵ See Exhibits SLDM-06A, pp. 2-6, and SDLM-07, pp. 41-43, SWC-11, pp. 11-12, and DWR-13, pp. 3-9.

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generally the same as water quality at the confluence of Old River and Rock Slough. Reclamation and DWR were thus assigned responsibility for meeting the chloride objective at the Rock Slough compliance point. (State Water Board Decision 1641 ("D-1641"), p. 146.)

Since 1978, however, many changes have occurred in the Delta. (Exhibit DWR-13, p. 2.) The most relevant change is the construction of the Los Vaqueros Reservoir. (*Id.*; SWC-11, p. 11.) As a result of that action, CCWD changed the way it takes water from the Delta, including water pumped at Pumping Plant No. 1. (Exhibit SWC-11, p. 11.) More specifically, since construction of the Los Vaqueros Reservoir, CCWD has reduced its Rock Slough diversions, such that at times Rock Slough essentially becomes a dead-end channel, and water in the Slough becomes stagnant. (*Id.*; Exhibit DWR-13, pp. 4-5.) The stagnation impairs water quality. That problem is exacerbated by poor quality drainage water entering Rock Slough from Veale Tract and other neighboring Delta islands, and seepage into the Contra Canal that is unrelated to CVP or SWP operations. (Exhibit SWC-11, p. 11.)

When those conditions exist, CVP and SWP operations cannot effectively maintain quality water at the Rock Slough compliance point. (Exhibit DWR-13, pp. 5-6.) Indeed, as reflected in Appendix 1 to the 2006 Draft Bay-Delta Plan, CCWD, Reclamation, and DWR all agreed that during low flow periods in the Rock Slough ("Appendix 1"), DWR and Reclamation have limited ability to control chloride concentration at Pumping Plant No. 1. (Appendix 1, p. 39.) For these reasons, there appears no legal or policy rationale that could explain why Reclamation or DWR should be solely responsible for maintaining the chloride objective at Rock Slough under those conditions.

The Authority recognizes that there are two ways to more equitably allocate responsibility. One approach is the addition of a compliance location in Old River, near Holland Tract. The additional compliance point would allow the State Water Board in a subsequent proceeding to allocate responsibility for compliance (1) at the new location to Reclamation and DWR, and (2) at the Rock Slough compliance point to Reclamation and DWR when they are able to control water quality at that location (sufficient pumping at Pumping Plant No. 1), and to other entities, such as CCWD, whose actions affect water quality between Old River, near Holland Tract and the end of Rock Slough, at Pumping Plant No. 1 on the Contra Costa Canal. The other approach is to not add a compliance point Old River, near Holland Tract, but in a subsequent proceeding allocate the responsibility for compliance with the chloride objectives to more than just Reclamation and DWR – again other entities whose actions contribute to the

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degradation in water quality. The Authority recommended that the State Water Board follow the former approach.

Through the issuance of the Draft 2006 Bay-Delta Plan, the Authority's recommendation was rejected. Appendix 1 first explains that the additional compliance point could not be added because the State Water Board had not received adequate documentation, including documentation that would form the basis for environmental analysis. (Appendix 1, p. 39.) Appendix 1 then explains that, even if that documentation were provided, the addition could not be made because no other entity had been identified, which should be required to meet the objective at the existing Rock Slough compliance point. (Appendix 1, p. 39.) Both of these responses are insufficient. It is not the role of the Authority or any other person or entity recommending changes to the 1995 Bay-Delta Plan, to prepare environmental report or analysis required to implement a recommended change, or to identify at this stage other entities that the State Water Board may assign responsible for helping achieve the chloride objectives.

Notwithstanding, if the State Water Board is not inclined to add a compliance point in Old River, near Holland Tract, it should state explicitly in the Program of Implementation that it will review the assignment of responsibility for the chloride objectives either (1) during the water rights proceeding that follows adoption of an amended Bay-Delta Plan or (2) through water quality actions, including possibly allocating responsibility for compliance with the chloride objective measured at the Rock Slough to other entities whose actions contribute to the degradation in water quality in that area of the Delta.⁶ Indeed, such a statement would be consistent with the purpose of the Draft 2006 Bay-Delta Plan of establishing:

[W]ater quality control measures that can be implemented in part or in whole by assigning responsibility to water right holders and water users to mitigate for the effects on the beneficial uses of their diversions and use of water.

(Draft 2006 Bay-Delta Plan, p. 3.)

⁶ As part of the request made by the Authority during the workshop that preceded the Draft 2006 Bay-Delta Plan, the Authority supported a means of allocating responsibility at the Rock Slough compliance point and the recommended new compliance point in Old River, near Holland Tract. (See Exhibits DWR-13, p. 3-9, and CCWD-07, p. 11.) The Authority recognizes that the request on how responsibility should be allocated must be left for the water rights proceeding that will follow.

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2. Flexing For Delta Outflow Objectives And Export Limits

A. The Need To Avoid Over-Compliance And Allow For Flexing Of The Delta Outflow Objective

The Authority proposes changes to the Delta outflow objectives that would not require any change in the protections they afforded to fish and wildlife. (Exhibit SLDM-16B; Exhibit SLDM-18, pp. 4-5, 12.)

i. Avoidance of Over-Compliance

The Delta outflow objectives are expressed generally as a number of days in a particular month in which the maximum daily average electrical conductivity of 2.64 mmhos/cm must be maintained at a specified location. (Draft 2006 Bay-Delta Plan, p. 20.) The Delta outflow objectives were established as "habitat indicators", based primarily upon average multi-month data concerning species/outflow relationships. The State Water Board has assigned responsibility for the Delta Outflow objectives to Reclamation and DWR. (D-1641, p. 146.)

The ability of Reclamation and DWR to precisely meet the number of days in a particular month of an electrical conductivity of 2.64 mmhos/cm at the specified location is extremely difficult. (Exhibit SLDM-18, p. 2.) This is so because the electrical conductivity at a specified location is dependant upon numerous variables, including weather conditions, tides, winds, and other natural elements. (*Id.* at 2-3.) Thus, because of the risk of enforcement actions if the Delta outflow objectives are exceeded, Reclamation and DWR operate the CVP and SWP, respectively, very conservatively. (*Id.* at 3.) They often achieve the electrical conductivity of 2.64 mmhos/cm at the specified location on more days in a particular month than required. (*Id.*)

This over-compliance with the Delta outflow objectives cost the CVP and SWP many thousands of acre-feet of stored water, a result that is particularly disturbing given the "indicator" nature of the Delta outflow objectives and the Delta outflow objectives being based upon average multi-month data concerning species/outflow relationships. (*Id.*)⁷ To avoid that unnecessary water cost, the Authority proposes a modification of the

⁷ The waste of water is made more alarming by the fact that since the Delta outflow objective was established in 1995, recent data shows that many of the relationships used to support the objectives were unfound or not as strong as once thought. (See SDLM-07, p. 18.)

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means in which the Delta outflow objectives are implemented. The Authority proposes that the Amended Bay-Delta Plan provide a compliance buffer that authorizes monthly compliance to occur within the month or within a certain number of days after the end of the month.

ii. Flexing

The Authority also requests that the State Water Board amend the Delta outflow objectives to increase their flexibility. Analyses performed during the workshop that preceded the Draft 2006 Bay-Delta Plan suggest that flexibility, if exercised, could "produce" ten of thousands if not hundreds of thousands of acre-feet of water, with the real potential to increase protections for beneficial uses. (Exhibit SLDM-16B.) And while the 1995 Bay-Delta Plan established the concept that allowed for flexing of the Delta outflow objectives in limited circumstances, the concept was principally applied to the Export Limit objectives. (1995 Bay-Delta Plan, p. 21, fn. 22.) Below, the Authority presents again its proposal for a process to guide flexing of the Delta outflow objectives. The process is designed to allow for flexing only when the United States Fish and Wildlife Service, the National Oceanic and Atmospheric Administration National Marine Fisheries Service, and the California Department of Fish and Game ("federal and state fishery agencies") and the State Water Board find that the flex would not cause significant harm to the intended beneficial uses protected by the Delta outflow objectives.

B. The Need For A Strong Process To Guide Export Limits Flexing

The Draft 2006 Bay-Delta Plan would allow for flexing of the Export Limit objectives similar to the existing authority under the 1995 Bay-Delta Plan. As set forth in footnote 18 to Table 3 in the Draft 2006 Bay-Delta Plan, variations to the export limits could occur if the federal and state fishery agencies agree. Short-term variations would also be authorized for the purpose of facilitating a study of the feasibility of recirculating export water into the San Joaquin River to meet flow objectives. (Draft 2006 Bay-Delta Plan, pp. 15-16.) The conditions imposed on the flexibility would be: (1) an expressed intent that it result in no net water loss supply cost annually within the limits of the water quality and operational requirements of the Draft 2006 Bay-Delta Plan, and (2) the Executive Director of the State Water Board's veto power over any variations. The Authority supports the continued authority to flex, but believes the process could be improved.

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C. Process For Flexing

The Authority proposes that the State Water Board impose a process that guides the consideration of flexing the Delta outflow objectives and Export Limits objectives.⁸ The process is explicitly science-based, and provides a final product that supports a decision to either allow or deny flexing. The ultimate result of the process is more transparency and greater accountability. The process is as follows:

1. The federal and state fishery agencies, Reclamation, and DWR (collectively, the "Agencies") shall meet to determine whether a variation or flex of the Delta outflow or Export Limit objectives should be considered:
 - A. Immediately before the relevant objective begins controlling Delta operations, and
 - B. If, during the time a particular objective is controlling Delta operations, there is a change in the fishery of hydrologic conditions that existed at the time the objective became controlling.

Full consideration of a flex will be initiated if, during any consultation, any one of the Agencies requests it.

2. When full consideration is initiated, the Agencies shall:
 - A. Develop an alternative or alternatives for how the objective could flex ("Action Alternative(s)").
 - B. Consider for each Action Alternative how the water that would otherwise be necessary to meet the objective ("saved water") would be subsequently used. Saved water shall revert to the CVP and SWP for authorized uses, unless the Management Agencies can provide a scientific basis showing a need by fish and/or wildlife for additional water, in which case no more than 50 percent of the saved water can be used for that (those) purpose(s).
 - C. In determining how saved water will be used, provide for multiple use of the saved water whenever possible.
 - D. Provide science-based evaluations of a "no-action" alternative and each Action Alternative developed, including: (i) quantified estimates of population level effects on fishery resources; (ii) quantitative estimates of

⁸ As the Authority previously presented, this process could also apply to the Rio Vista objective.

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effects on water supply and water quality; and (ii) quantitative estimates of effects on water supply and water quality; and (iii) quantified estimates of uncertainty for both population level, water supply, and water quality effects.

- E. Not propose an Action Alternative that:
- i. During the February through June period (other than during a VAMP flow/pumping restriction), and for the export objective, would cause an increase in the E/I ratio of more than ten percent (i.e., 35% to 45%).
 - ii. During the VAMP 31-day pulse period, and for export objective, would cause pumping to exceed 200% of 3-day running average of San Joaquin River flow at Vernalis.
 - iii. During the July through January period and for the export objective, would cause an increase in the E/I ratio of more than ten percent (i.e., 65% to 75%).
 - iv. For the outflow objective, would (a) occur when the Port Chicago standard is not triggered, (b) cause Delta overflow to fall below 20,000 cfs, or (c) cause the February through June average location of X2 to move more than one kilometer further upstream from the Golden Gate Bridge.
 - v. For any objective, would impair the ability of Reclamation or DWR to meet their respective contractual obligations.
 - vi. For any objective, would cause a significant adverse environmental effect.
3. If the Agencies agree on a single Action Alternative, the Agencies shall immediately notify the Executive Officer of the State Water Board of the decision. The Agencies shall, within 24 hours of reaching the decision, provide the Executive Officer with a written description of the Action Alternative and the reason for the decision. The Agencies may begin implementing the Action Alternative 24 hours after the Agencies notified the Executive Officer. If the Executive Officer does not object to the decision within 5 days, the decision by the Agencies will remain in effect. If the Action Alternative is implemented 24 hours after the Agencies provided the Executive Officer notice, but the Executive Officer objects to the decision within the 5-day period, the State Water Board shall consider the CVP and SWP in compliance with the objective during any under-compliance that results directly or indirectly from implementing the Action Alternative.

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4. On or before January 1 of each year, the Agencies shall prepare and transmit to the Executive Officer of the State Water Board a report summarizing flexing activities, accounting for the changed water use, describing how the saved water was allocated among beneficial uses of flexing over the course of the prior year, consistent with the requirements under paragraph 2.⁹ The report shall provide the information required under paragraph 2 for each occasion when full consideration of a flex was initiated, whether or not the Agencies agreed on an Action Alternative. For instances when full consideration of a flex was initiated but agreement not reached, a majority and minority report may be included in the report. As soon as possible, the Executive Officer shall make the report available for public review.
5. The Agencies shall include one State Water Board staff member who may participate in, but not vote on, all deliberations required to reach a decision on an Action Alternative. The funding for this staff member shall be provided by the Agencies. The staff member shall:
 - A. Participate in all actions required under paragraphs 2 and 4;
 - B. Assist the Executive Officer of the State Water Board in determining whether or not to object to an Action Alternative; and
 - C. Assist in developing and amendments or supplements to this Decision Tree.

This process was rejected in the Draft 2006 Bay-Delta Plan for the for the following reasons: (1) a failure to provide analysis that demonstrates a flex will protect the beneficial uses; (2) an unwillingness to accept the process until causes of the pelagic organism decline are understood; and (3) a failure by the proponents of the process to provide sufficient studies, modeling, and environmental analysis of the impacts of the process. (Appendix 1, p. 43.) None of those reasons are sufficient to reject the process.

Inherent in the rationale for rejecting the proposal is the underlying assumption that introducing the ability to flex the Delta outflow objectives and applying a process to guide all flexing decisions (outflow and exports) would somehow lead to further harm of

⁹ The Authority would also support a requirement that the Agencies provide the State Water Board with a report after each flex consideration.

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pelagic organisms or impair protections currently afforded to fish and wildlife. This is not true. The Authority and others specifically designed the flexing process so that flexing would not occur if the federal and state fishery agencies and the State Water Board believed it was inappropriate. Under the proposal, any one of those agencies has the power to preclude a proposal for flexing. Additionally, the need for additional studies, modeling, and environmental analysis is beyond the scope of the Authority's role in this process and should not form the basis for the proposal being rejected.

In conclusion, the Authority's proposals for flexing would provide a mechanism that could solve several important problems with the current Delta outflow and Export Limits objectives. It would ensure that decisions on flexing were science-based and well reasoned, thus improve both consistency and transparency of decisions. It could also produce water that would be available for subsequent beneficial use, including for fish and wildlife.

4. Southern Delta Agricultural Salinity Objectives

The Authority does not object at this time to the southern Delta objectives. Instead, the Authority objects to the extensive and often times conflicting discussion of the southern Delta objectives, particularly in the Program of Implementation.

The Draft 2006 Bay-Delta Plan states clearly that concerns for salinity in the southern Delta¹⁰ result from low flows; salts imported in irrigation water by the State and federal water projects; municipal discharges; subsurface accretions from groundwater; tidal actions; diversions of water by the SWP, CVP, and local water users; channel capacity; and discharges from land-derived salts, primarily from agricultural discharge. (Draft 2006 Bay-Delta Plan, p. 26.) Each of those factors affect salinity differently (if at all) at the four southern Delta compliance locations: San Joaquin River at Airport Way Bridge, Vernalis, San Joaquin River at Brandt Bridge, Old River near Middle River, and Old River at Tracy Road Bridge. Thus, the Draft 2006 Bay-Delta Plan should explain (1) if each factor affects salinity at the different compliance location, and (2) when necessary, how the State Water Board will address each of those factors at the different compliance locations to ensure the southern Delta objectives are not exceeded. It fails to do that.

¹⁰ As used in the Draft 2006 Bay-Delta Plan, "southern Delta", includes locations (1) in the San Joaquin River at Airport Way Bridge, Vernalis, (2) in the San Joaquin River at Brandt Bridge, (3) in Old River near Middle River, and (4) in Old River at Tracy Road Bridge. (See e.g., Draft 2006 Bay-Delta Plan, pp. 12, 26.)

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Currently, the Draft 2006 Bay-Delta Plan improperly merges the Program of Implementation for all of the southern Delta objectives, (See Draft 2006 Bay-Delta Plan, p. 27), and relies upon an unlawful interpretation of D-1641 – one which seeks to impose sole responsibility on Reclamation and/or DWR. (See Draft 2006 Bay-Delta Plan, p. 26.) By merging the Program of Implementation for the southern Delta objectives and relying upon an unlawful interpretation of D-1641, the Draft 2006 Bay-Delta Plan presents a Program of Implementation that is unclear and may not result in the State Water Board or other agencies implementing the objectives in a lawful manner.

At a minimum, based on the factors presented above, the Program of Implementation must state clearly and emphatically that the southern Delta objectives will be implemented through the State Water Board's water rights and water quality authorities, including regulation of water diversions, pollutant discharge controls, best management practices to control the amount of waste produced, and improvements in water circulation. (Draft 2006 Bay-Delta Plan, p. 26.) Indeed, such a statement may be required to advance the stated purpose of the Amended Bay-Delta Plan, which, as quoted above, is to achieve the objectives by requiring "water rights holders and water uses to mitigate for the effects on the beneficial uses of their divisions and use of water." (Draft 2006 Bay-Delta Plan.)

For these reasons, the Authority respectfully requests that the State Water Board revise the Draft 2006 Bay-Delta Plan to:

- Include a new compliance point in Old River, near Holland Tract,
- Allow for greater flexibility of the Delta outflow objective,
- Include a process to guide the decision-making for flexing the Delta outflow and Export Limit objectives, and
- Refine the statements concerning the southern Delta salinity objectives to make plain that the State Water Board will implement those objectives, through exercise of water rights and water quality authorities,

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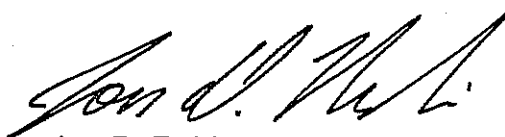
and in a manner that causes those affecting salinity levels because of their divisions and use of water to mitigate for their impacts.

Thank you for your consideration of these comments.

Very truly yours,

DIEPENBROCK HARRISON
A Professional Corporation

By



Jon D. Rubin

Attorneys for the San Luis & Delta-Mendota
Water Authority

cc: Daniel Nelson
Thomas Birmingham

Gaming to Study
Flexing The X2 Standard

SWRCB Workshop on Flexing

August 31, 2005

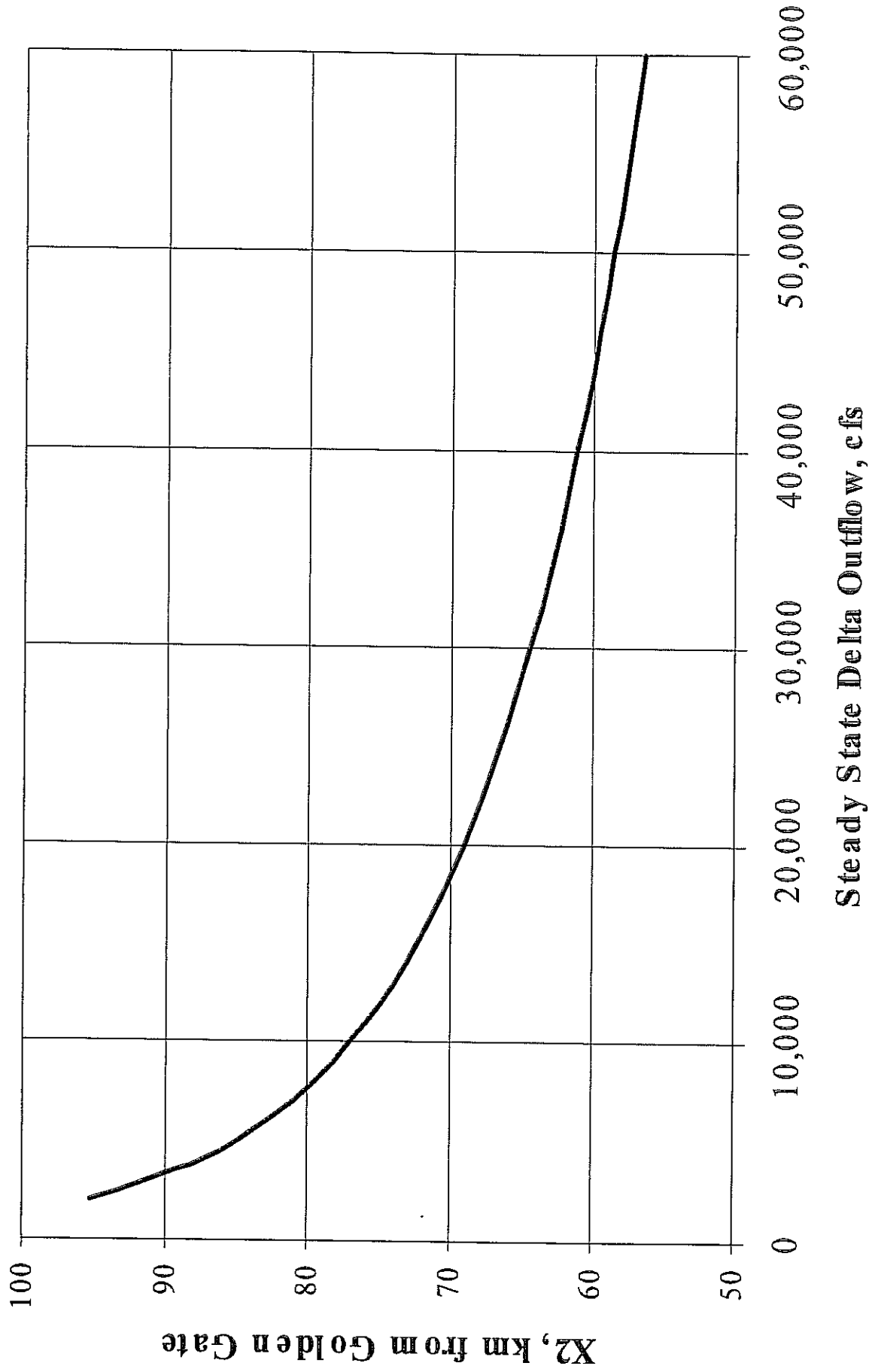
Outline of Presentation

- Why game?
- Who participated in various games?
- What was gamed?
- How was gaming conducted?
- Goals
- Results

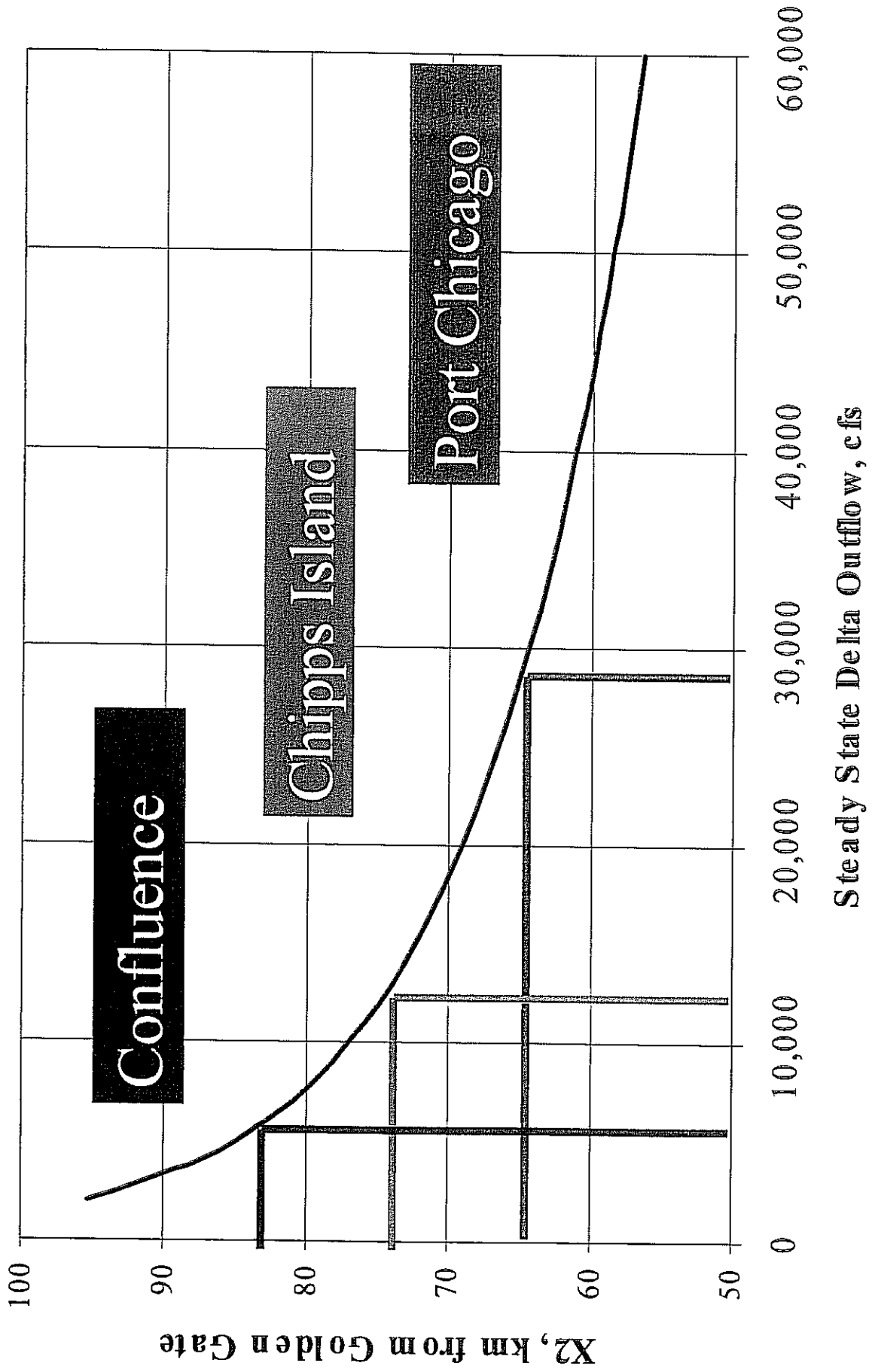
Why Game?

- Responds to SWRCB request.
- Test hypothesis that outflow flexibility can allow for improved overall operational patterns, considering costs and benefits:
 - Species linked to average X2 position
 - Upstream flow fluctuations
 - Upstream carryover storage
 - Supplies for Projects and environment
- Gain insight into possible sideboards.

X2 vs. Steady State Delta Outflow



X2 vs. Steady State Delta Outflow



Participation

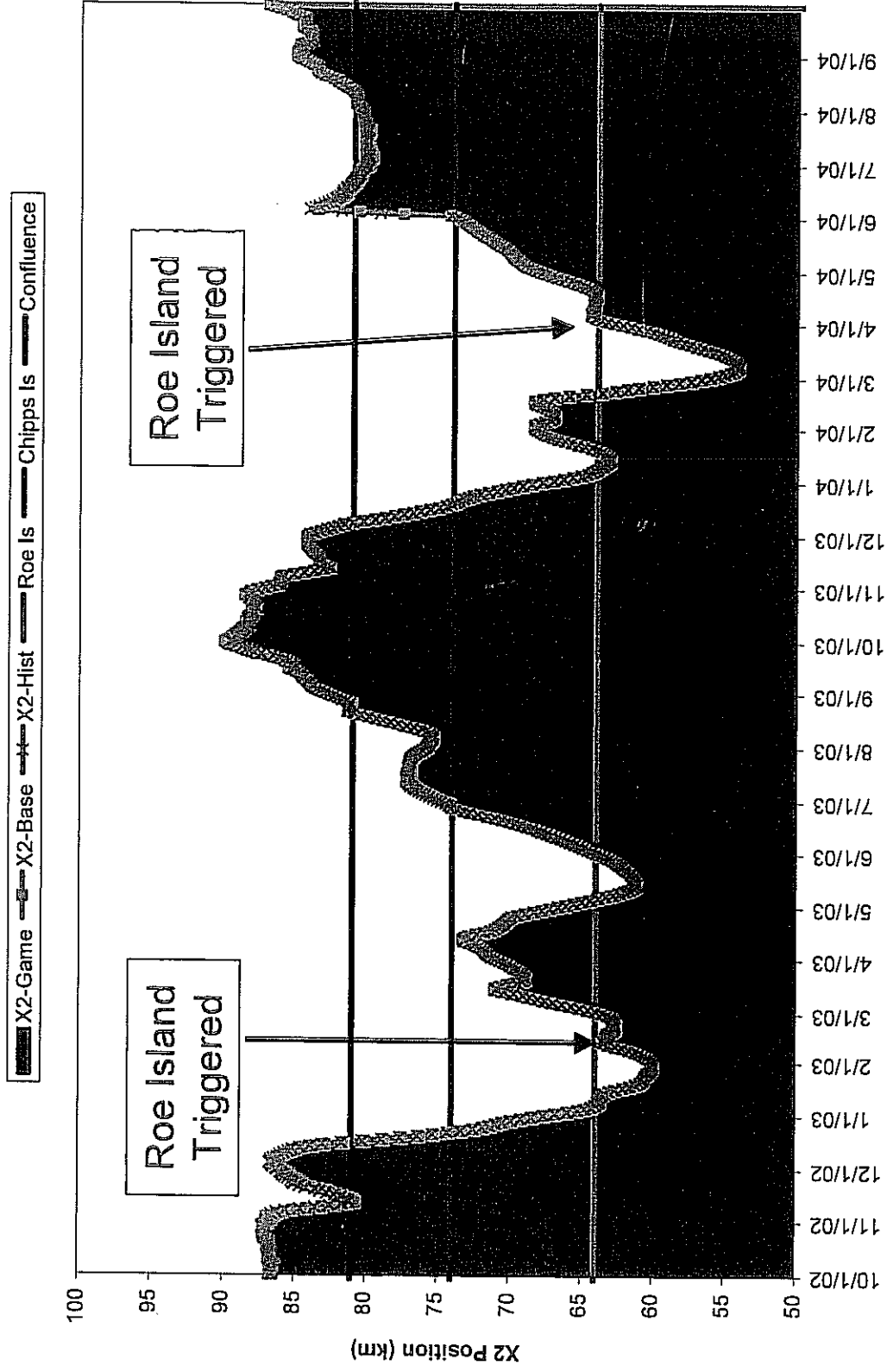
- Stakeholder (Game 1)
- NOAA Fisheries
- USFWS
- DFG
- DWR
- USBR
- EPA
- SWC
- MWD
- WWD
- SLDMWA
- Bay Institute
- American River Water Forum
- SWRCB Rep
- Export Contractor (Games 2 & 3)
- SWP Export Contractors
- CVP Export Contractors

What was Gamed?

- Game 1 (April 28, 2005).
- Game 2 & 3 (April 29, 2005)
- Episodes when compliance with X2 caused large upstream releases from storage:
 - February 2003
 - April 2004

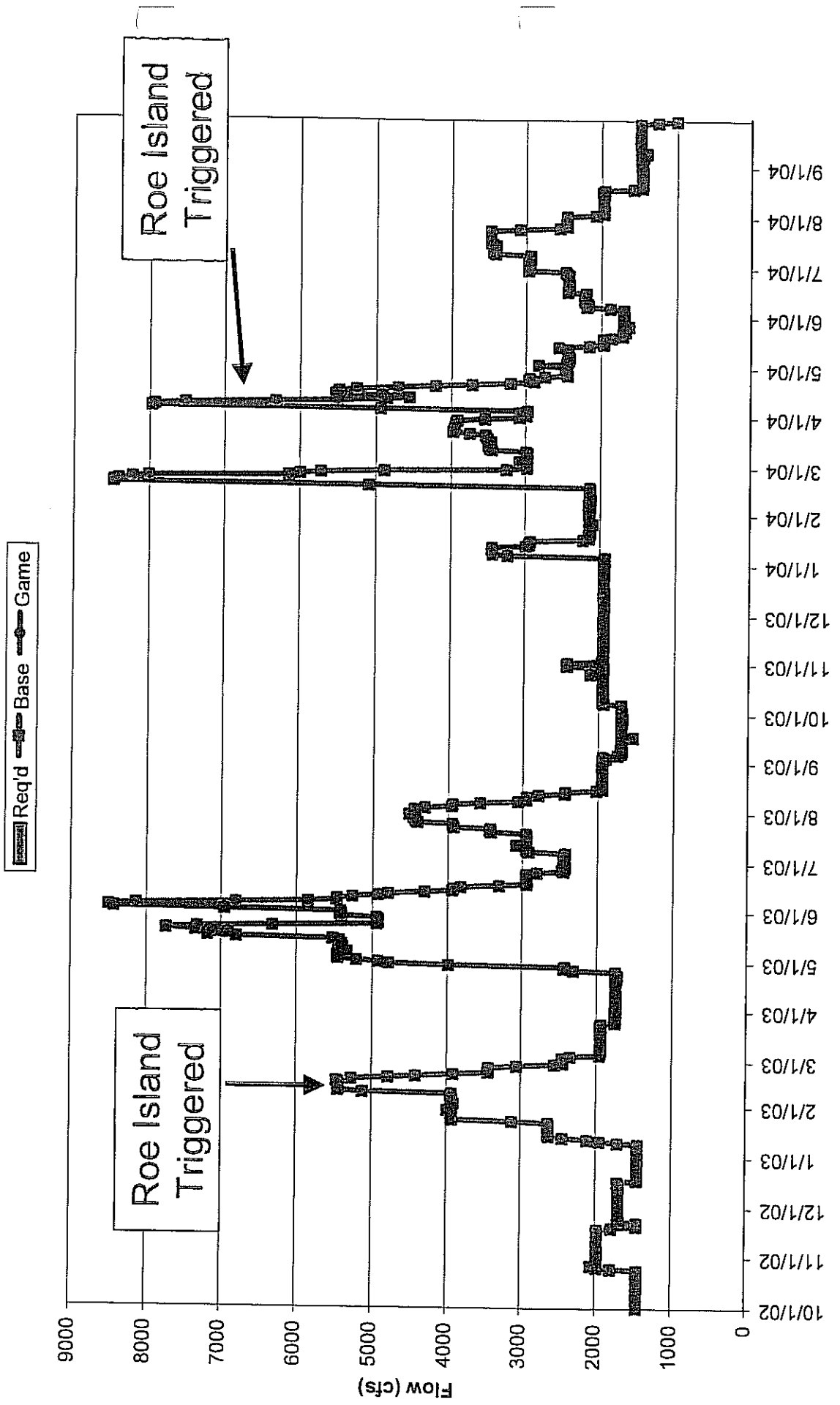
X2 Patterns: 2003 and 2004

Delta X2 Position



American R. Patterns 2003 & 2004

American River Flow below Nimbus



Process of Gaming

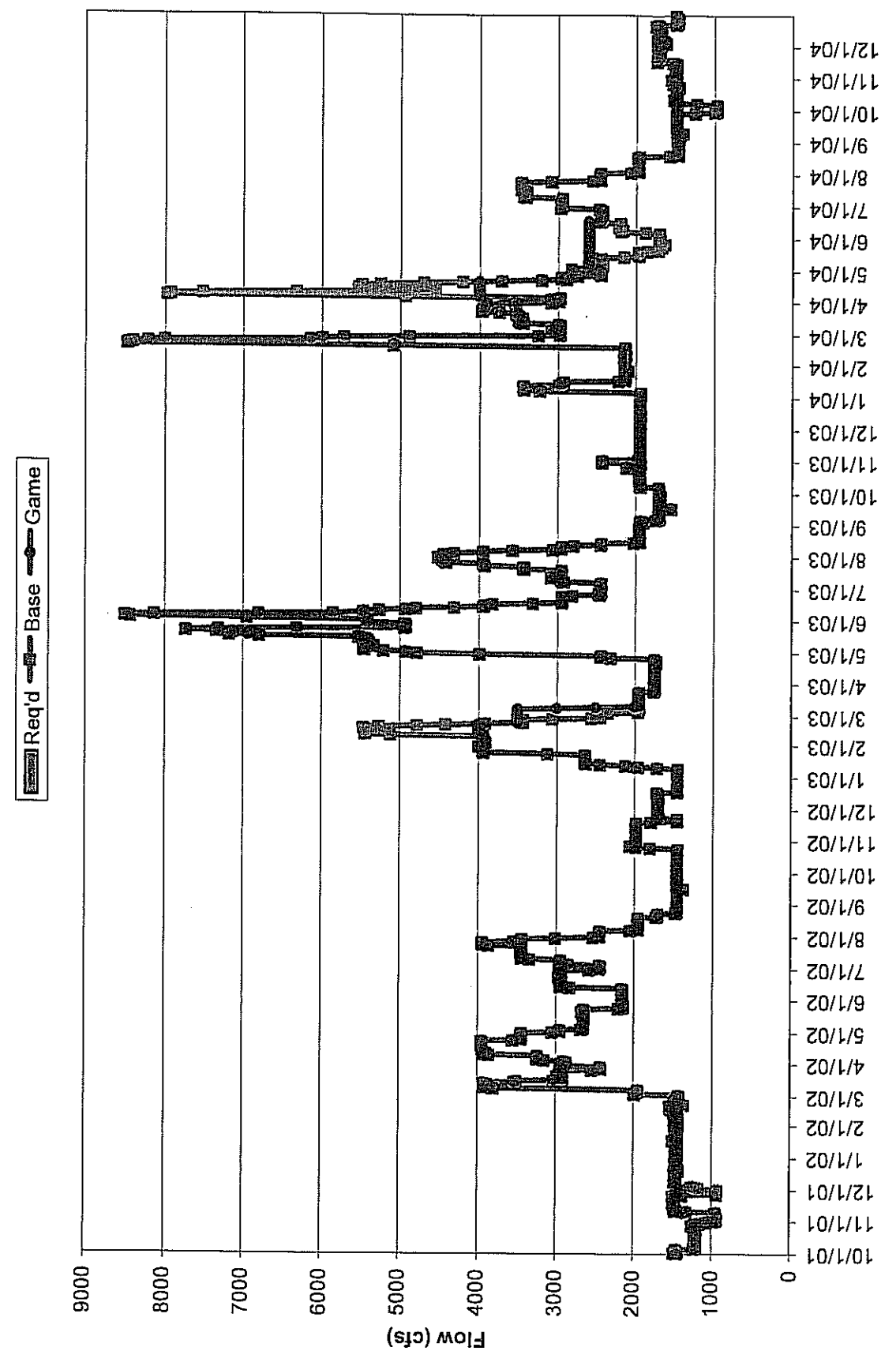
- Spreadsheet model
- Start from historic operation
- Try a different operation
- Track changes in flow and parameters related to flow
 - X2
 - Species correlated to X2
 - Storage
 - Upstream flow patterns
 - Exports

Game 1 Description

- February 2003 and April 2004
- Primary goal: eliminate upward spike in American River flows
- Secondary goals:
 - Game 1.1 Protect/enhance average X2 -- Rerelease water for outflow ASAP
 - Game 1.2 Enhance Folsom storage. Generate flow/export benefits in summer and fall.

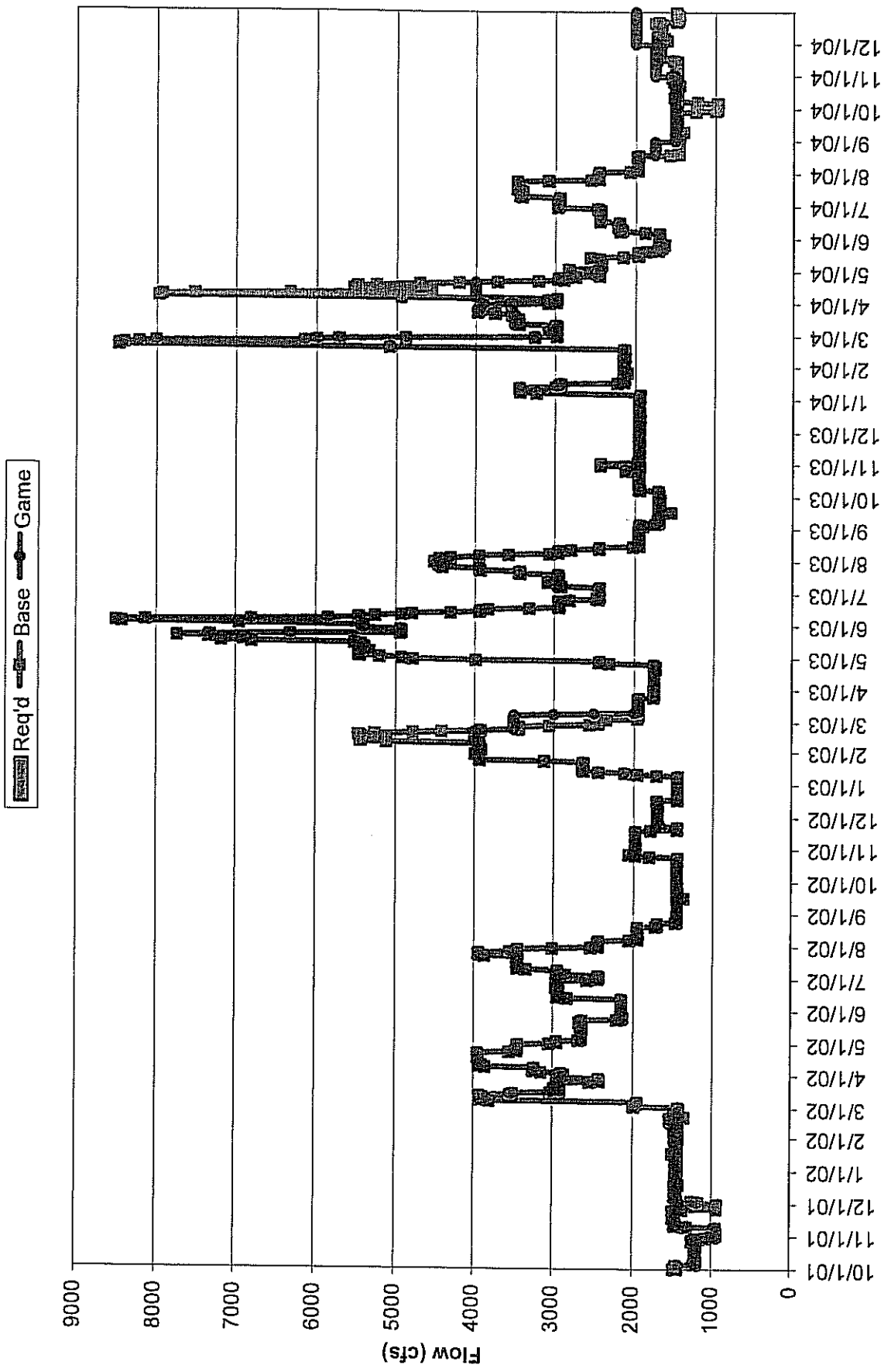
Game 1.1 American R Flows

American River Flow below Nimbus



Game 1.2 American R. Flows

American River Flow below Nimbus

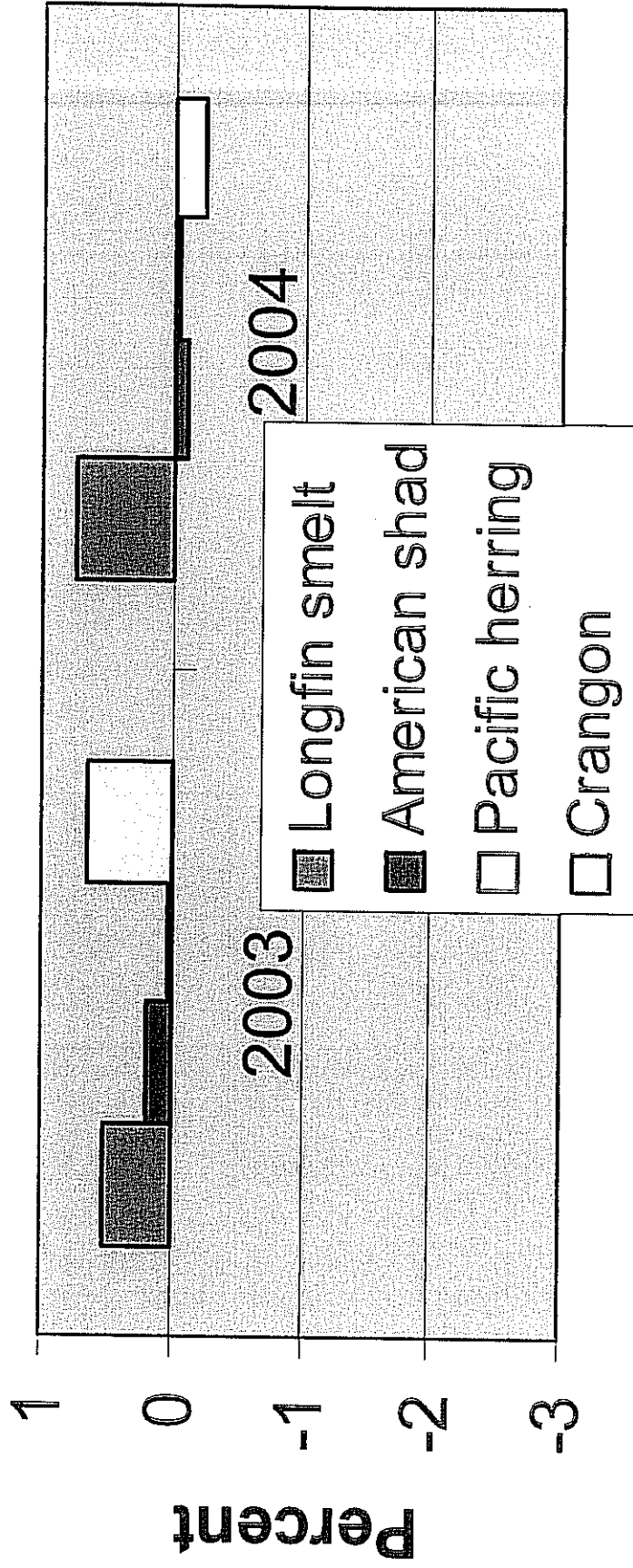


Game 1.1 Results

	Feb 2003	Apr 2004
Change in Folsom storage (TAF)	+27 Feb. -27 Feb-Mar	+51 Apr -51 May - Jun
Upstream benefits	No flow spike	No flow spike
Change in Feb - Jun X2	-0.07 km (downstream)	-0.08 km (downstream)
Req'd/Historical/ Final X2 Days	25/26/26	18/23/21
Potential Exports (TAF)	0	0

Game 1.1

Changes in Indices linked to X2

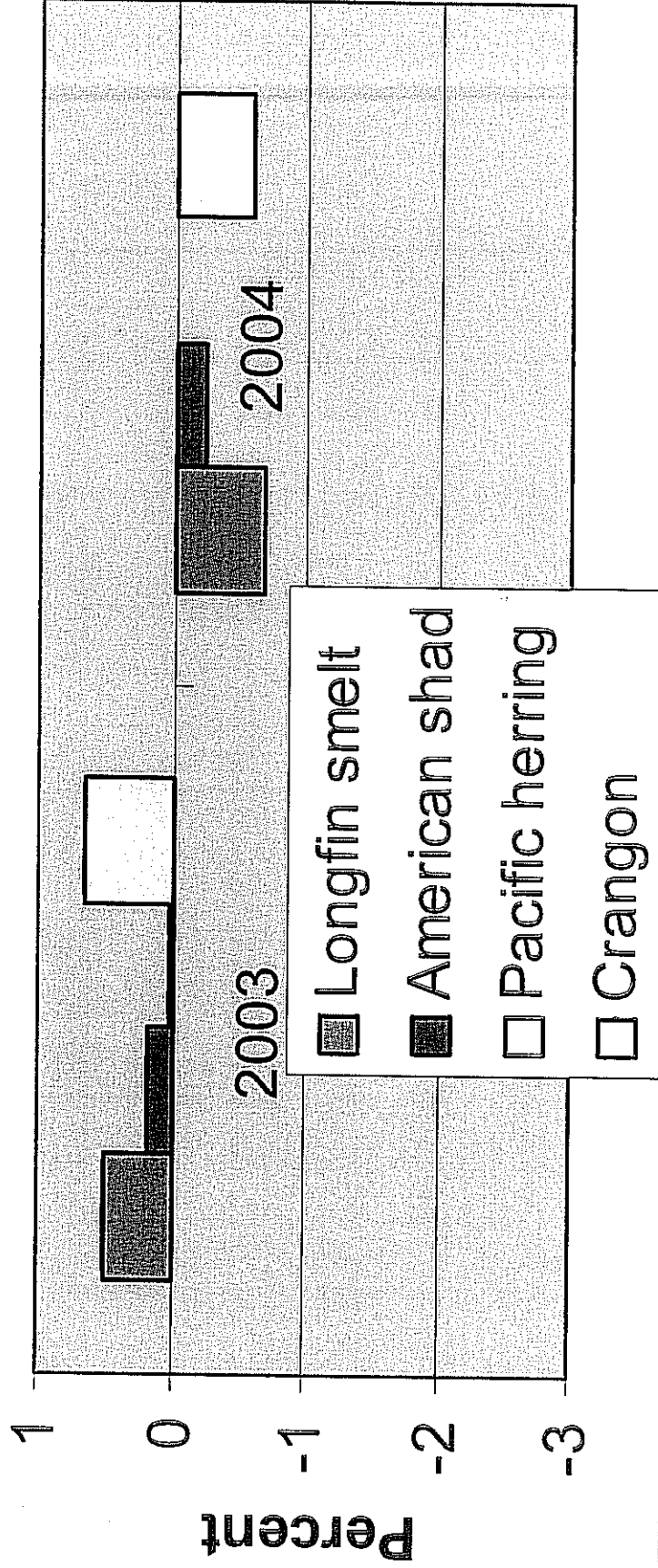


Game 1.2 Results

	Feb 2003	Apr 2004
Change in Folsom storage (TAF)	+27 Feb. -27 Feb-Mar	+51 Apr -29 Aug - Nov -22 Post Nov
Upstream benefits	No flow spike	No flow spike. Boost fall releases
Change in Feb - Jun X2	-0.07 km (downstream)	+06 km (upstream)
Req'd/Historical/ Final X2 Days	25/26/26	18/23/21
Potential Exports (TAF)	0	22

Game 1.2

Changes in Indices linked to X2

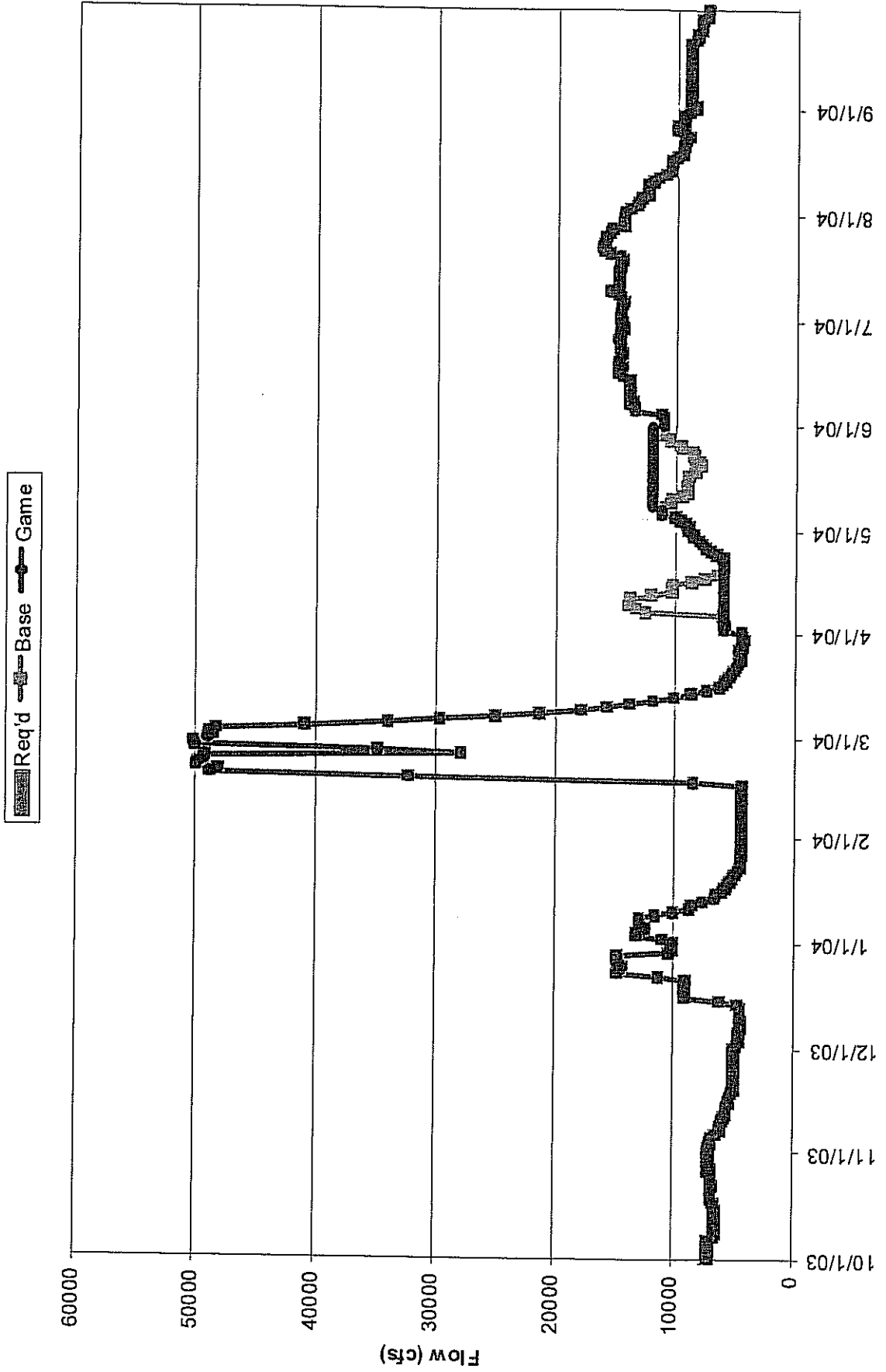


Game 2 Description

- April 2004 only
- Goals
 - Eliminate upward spike in American Sacramento Rivers.
 - Game 2.1 Protect/enhance average X2 -- Rerelease water for outflow ASAP
 - Game 2.2 Enhance upstream storage. Generate flow/export benefits in summer and fall.

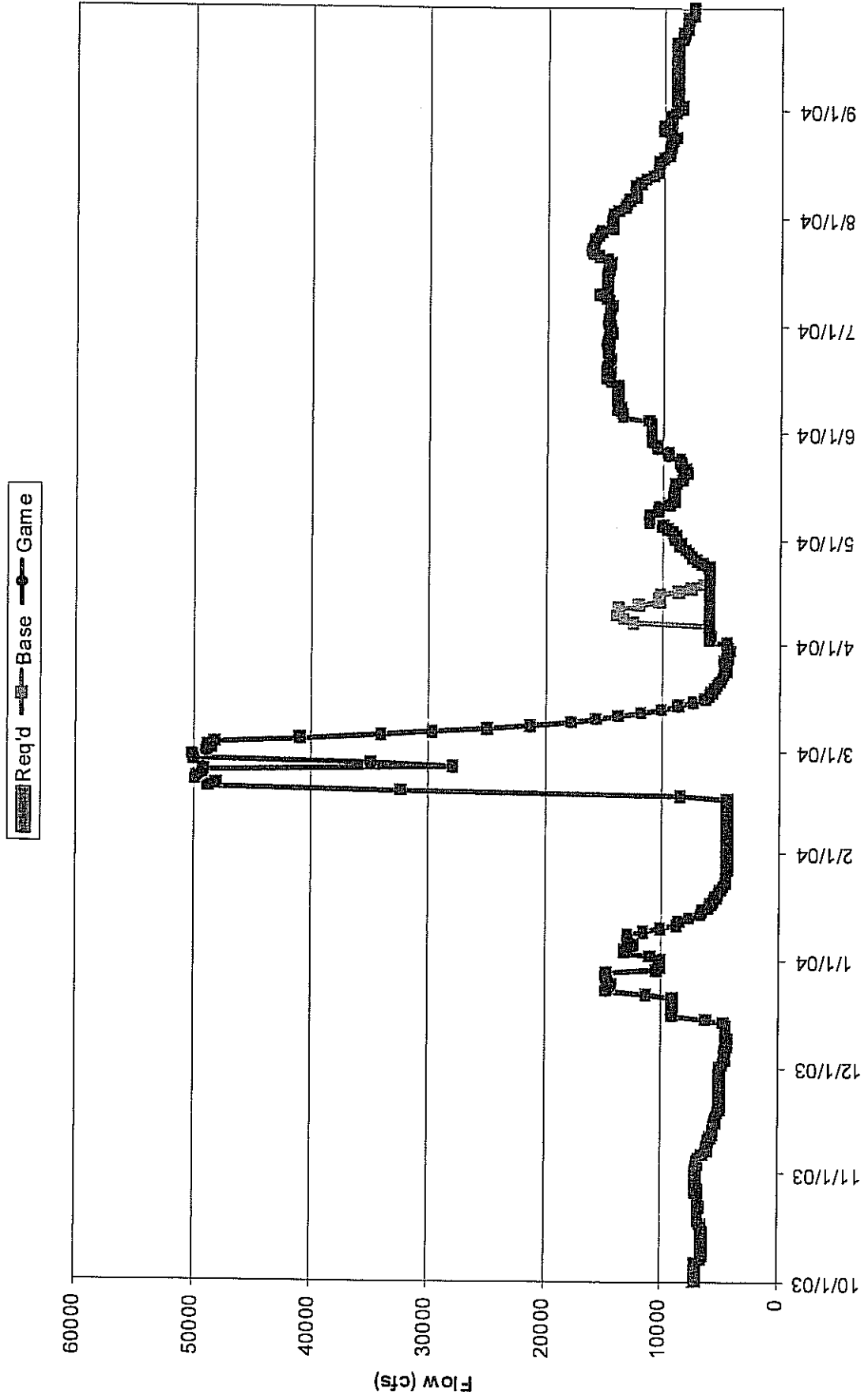
Game 2.1 Keswick Releases

Sacramento River Flow below Keswick



Game 2.2 Keswick Releases

Sacramento River Flow below Keswick

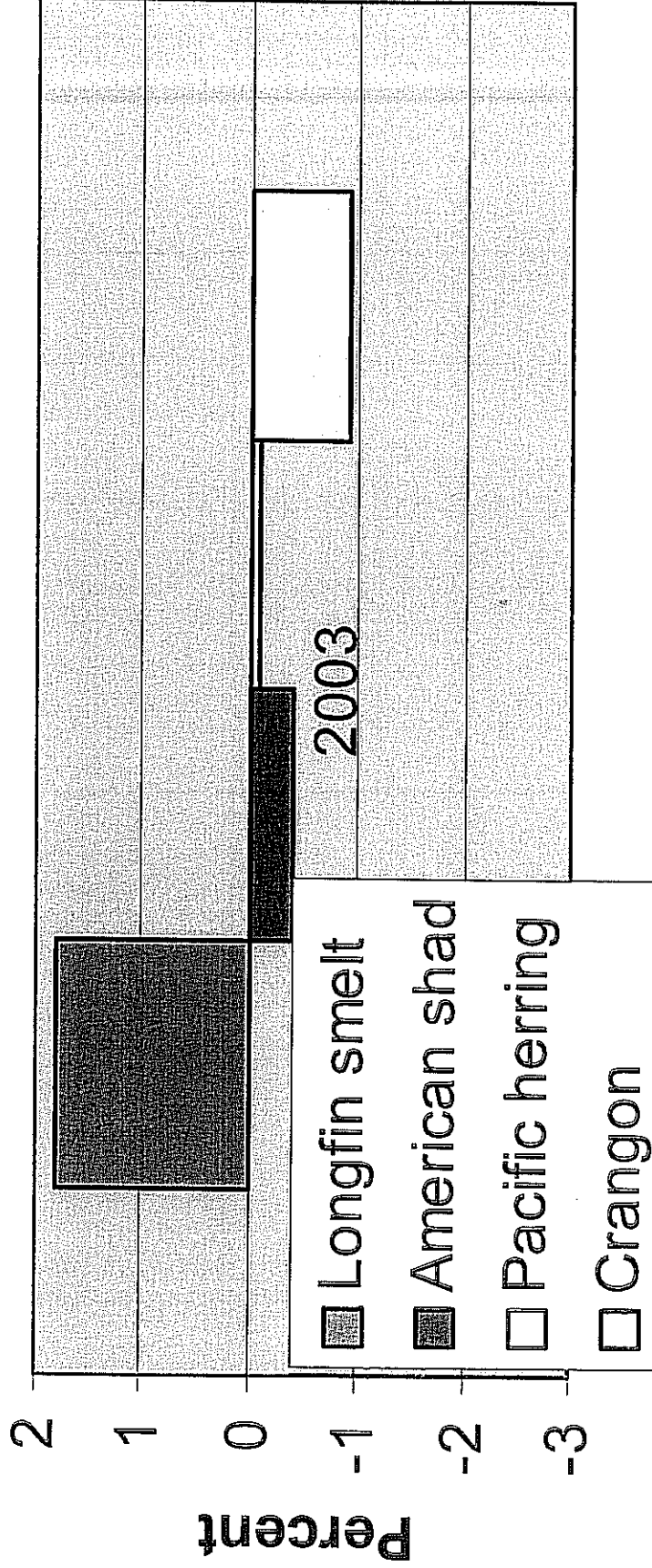


Game 2.1 Results

	Apr 2004
Change in upstream storage (TAF)	+172 April -172 May -- June
Upstream benefits	No flow spikes
Change in Feb -- Jun X2	-0.18 km (downstream)
Req'd/Historical/ Final X2 Days	18/23/17
Potential Exports (TAF)	0

Game 2.1

Changes in Indices linked to X2

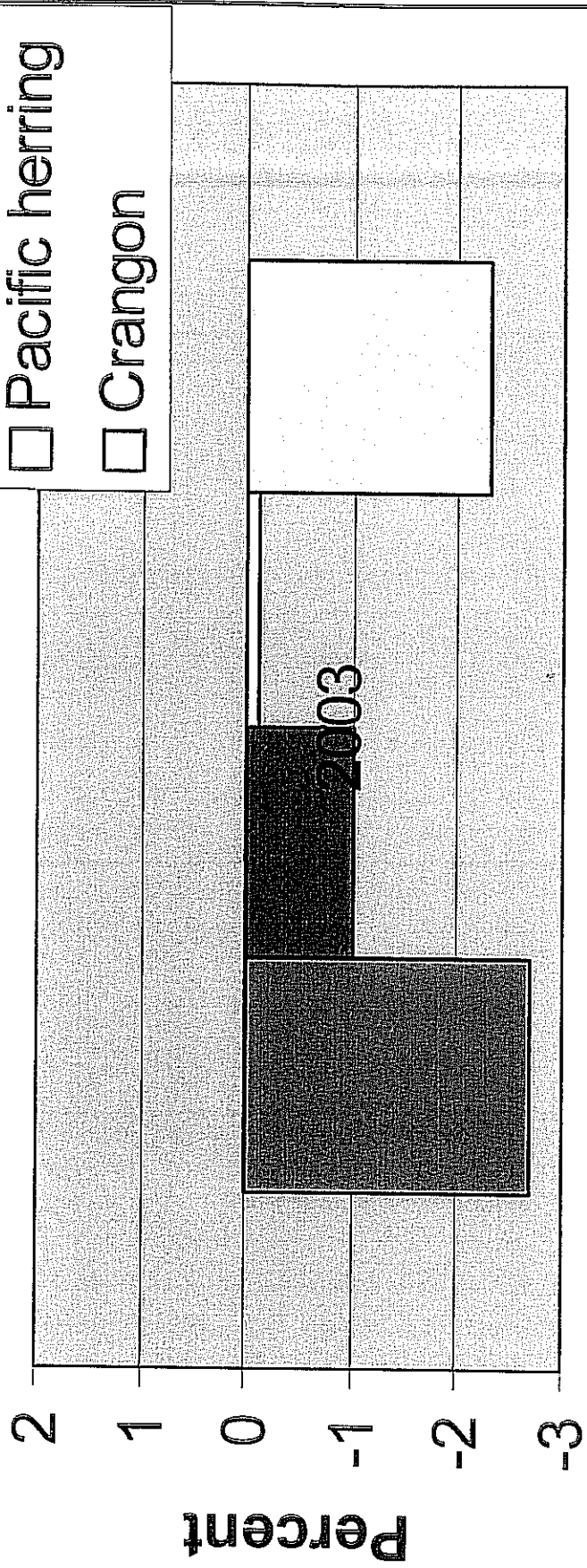


Game 2.2 Results

	Apr 2004
Change in upstream storage (TAF)	+172 April -172 Aug – Dec
Upstream benefits	No flow spikes. Boost Fall flows upstream
Change in Feb– Jun X2	0.28 km (upstream)
Req'd/Historical/ Final X2 Days	18/23/17
Potential Exports (TAF)	166

Game 2.2

Changes in Indices linked to X2

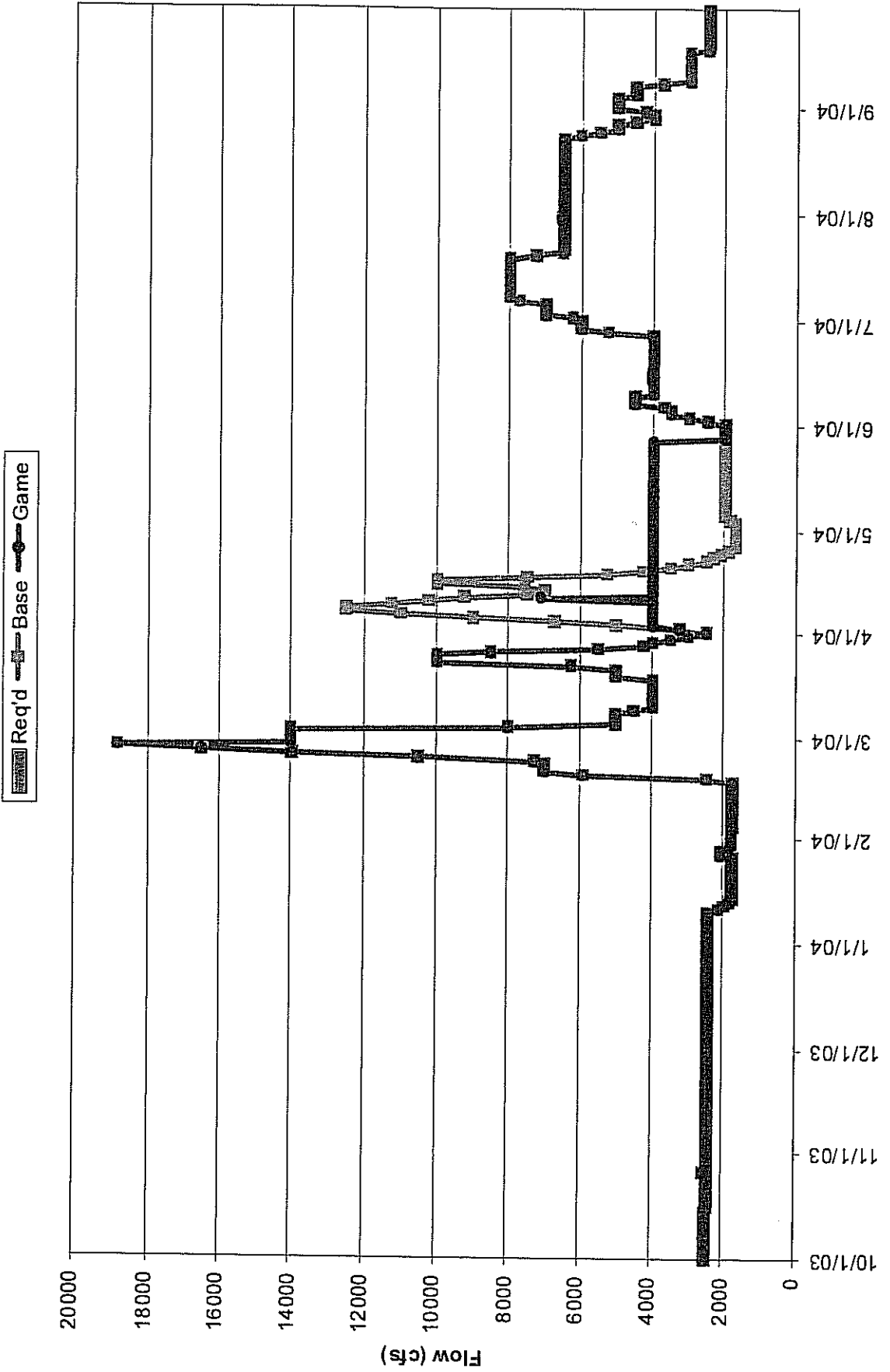


Game 3 Description

- April 2004 only
- Goals
 - Eliminate upward spike in American, Sacramento and Feather Rivers.
 - Game 3.1 Protect/enhance average X2 -- Rerelease water for outflow ASAP.
 - Game 3.3 Keep average X2 constant. Enhance upstream storage. Generate flow/export benefits in summer and fall.

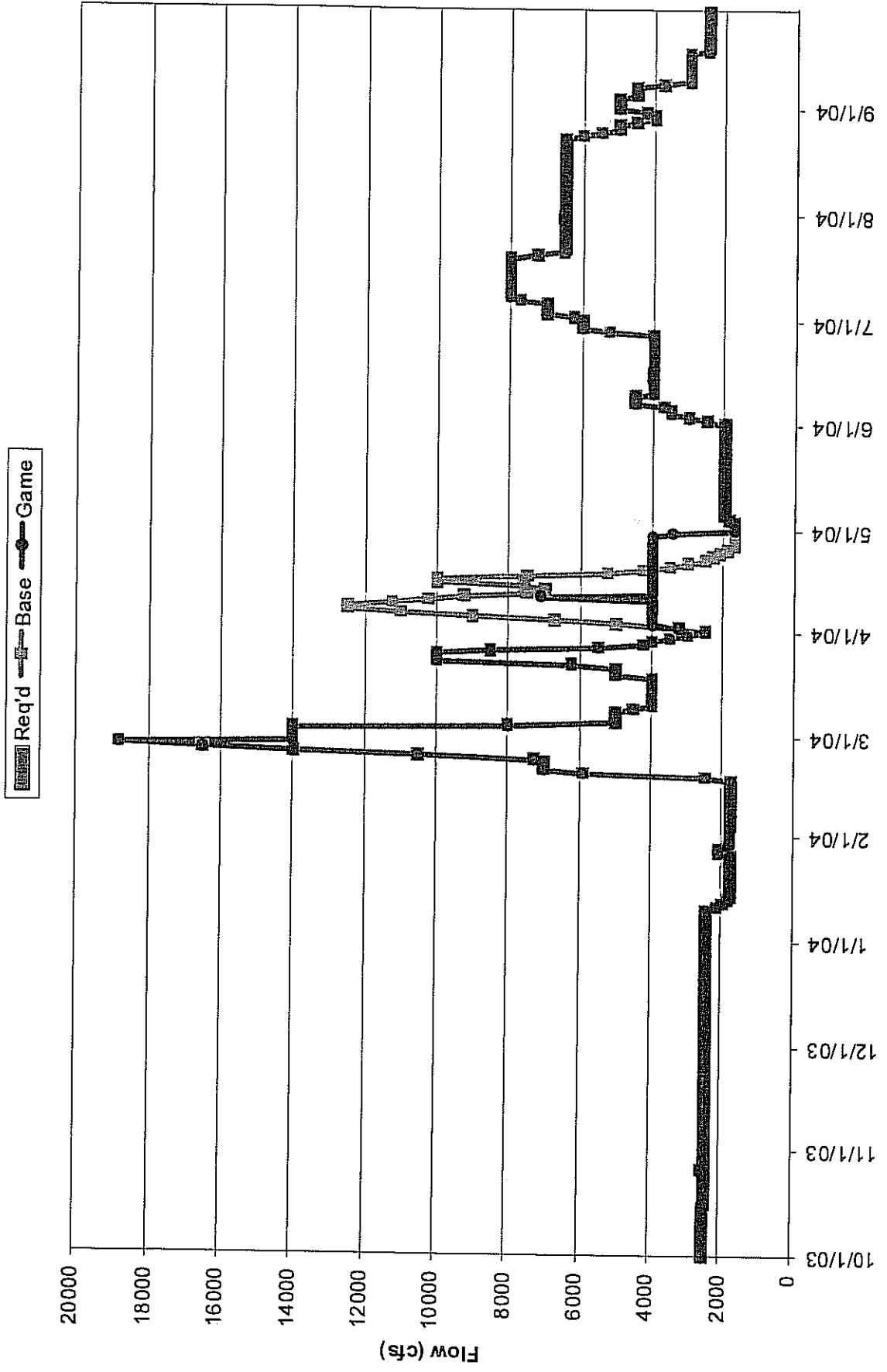
Game 3.1 Feather Flows

Feather River Flow below Thermalito



Game 3.3 Feather Flows

Feather River Flow below Thermalito



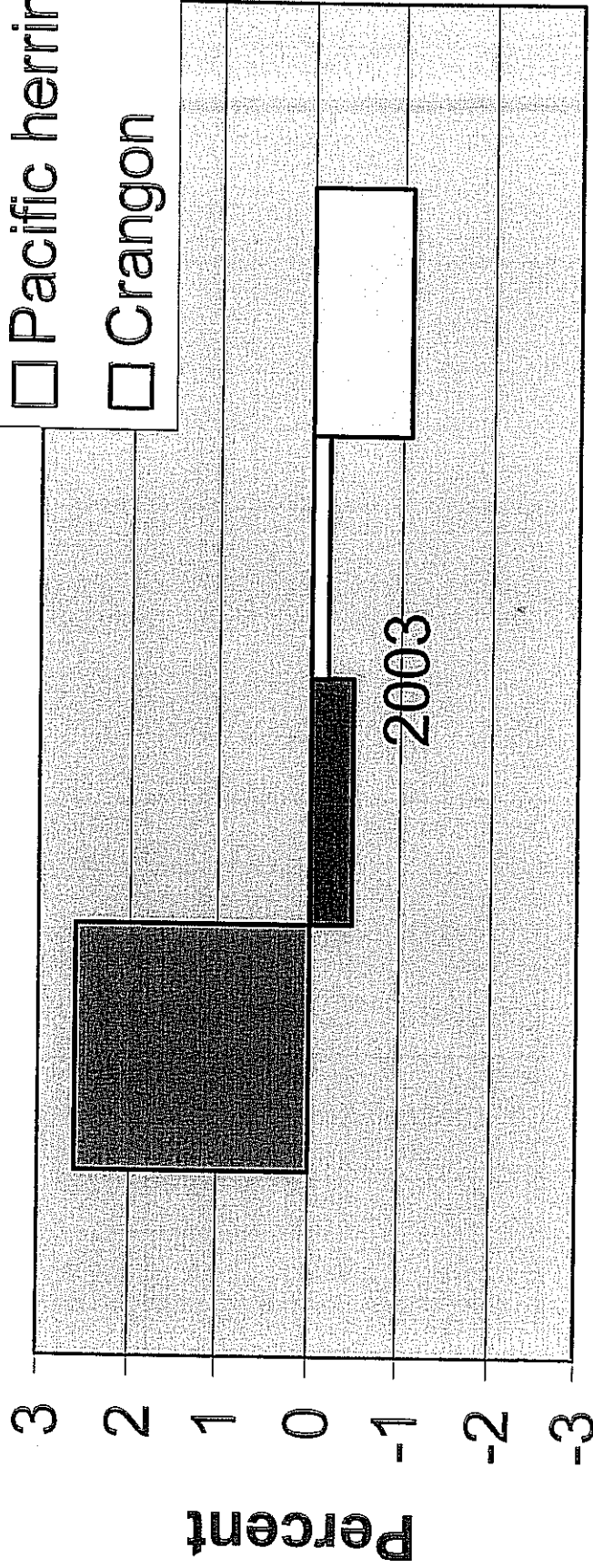
Game 3.1 Results

	Apr 2004
Change in upstream storage (TAF)	+322 April -172 April – June
Upstream benefits	No flow spikes
Change in Feb – Jun X2	-0.25 km (downstream)
Req'd/Historical/ Final X2 Days	18/23/4
Potential Exports (TAF)	0

Game 3.1

Changes in Indices linked to X2

- Longfin smelt
- American shad
- Pacific herring
- Crangon



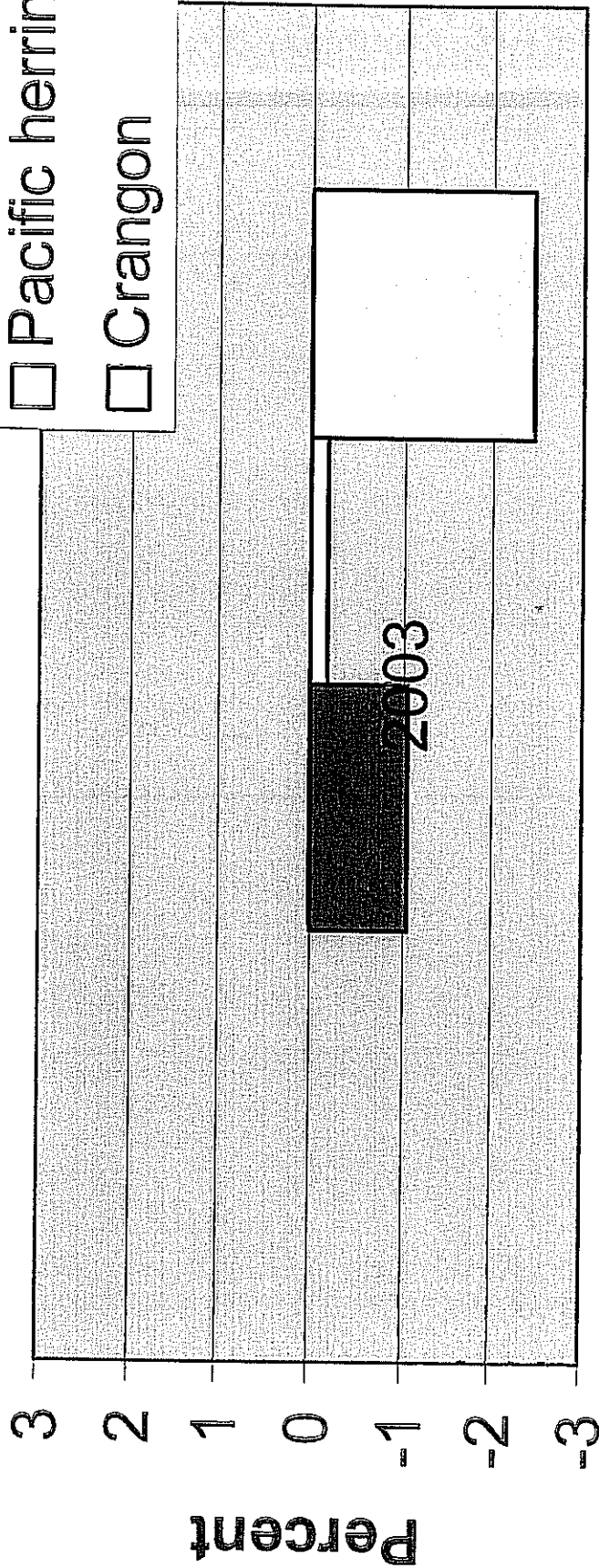
Game 3.3 Results

	Apr 2004
Change in upstream storage (TAF)	+322 April -211 May – June 111 July - Dec
Upstream benefits	No flow spikes. Boost fall releases upstream
Change in Feb – Jun X2	-0.0 km
Req'd/Historical/ Final X2 Days	18/23/4
Potential Exports (TAF)	Approximately 90

Game 3.3

Changes in Indices linked to X2

- Longfin smelt
- American shad
- Pacific herring
- Crangon



Overcompliance

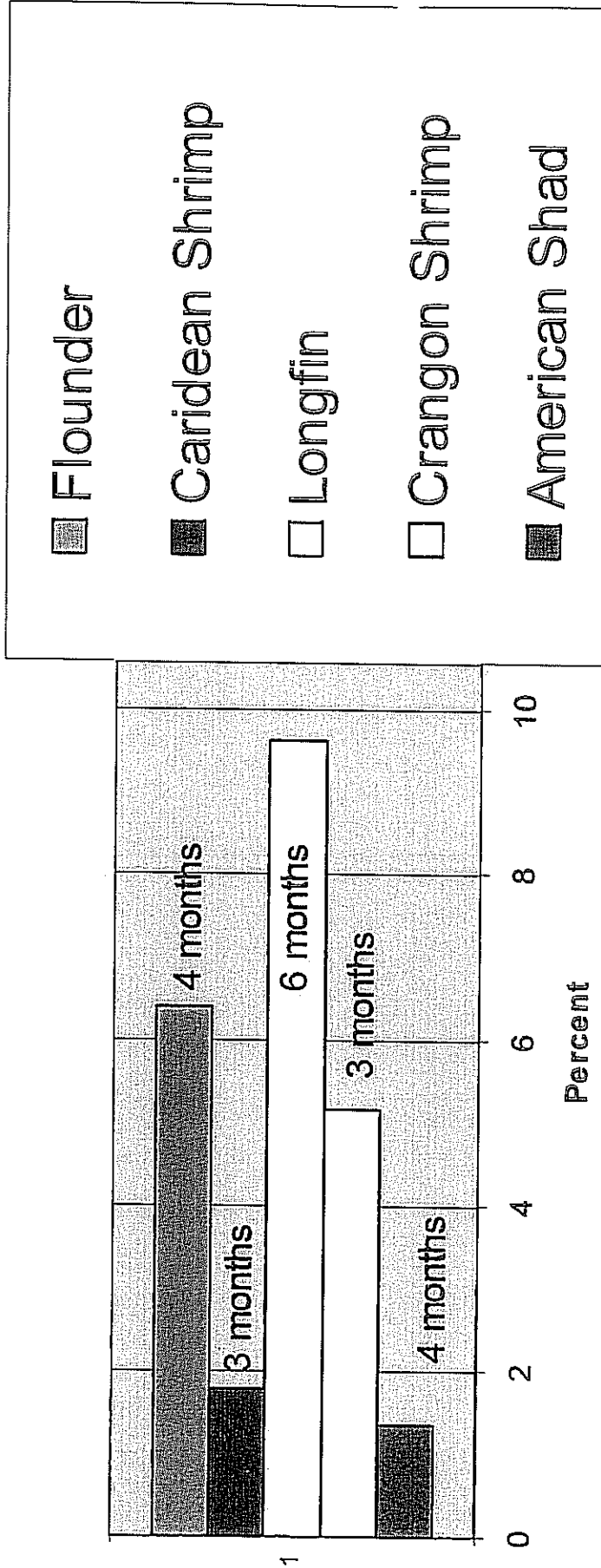
- Game 1 X2 std met despite “flex”
- Game 2 X2 std nearly met despite 172 TAF reduction in releases.
- Conclusion. Lots of excess releases to comply with X2.
- Compared to simple compliance, impacts to X2 indices are exaggerated.

Discussion

- A variety of flexes possible with various effects.
 - Reduce harmful upstream fluctuations
 - Move average X2 slightly upstream or downstream.
 - Generate upstream storage for flow enhancement, Project supply, EWA supply, etc.

End of Presentation

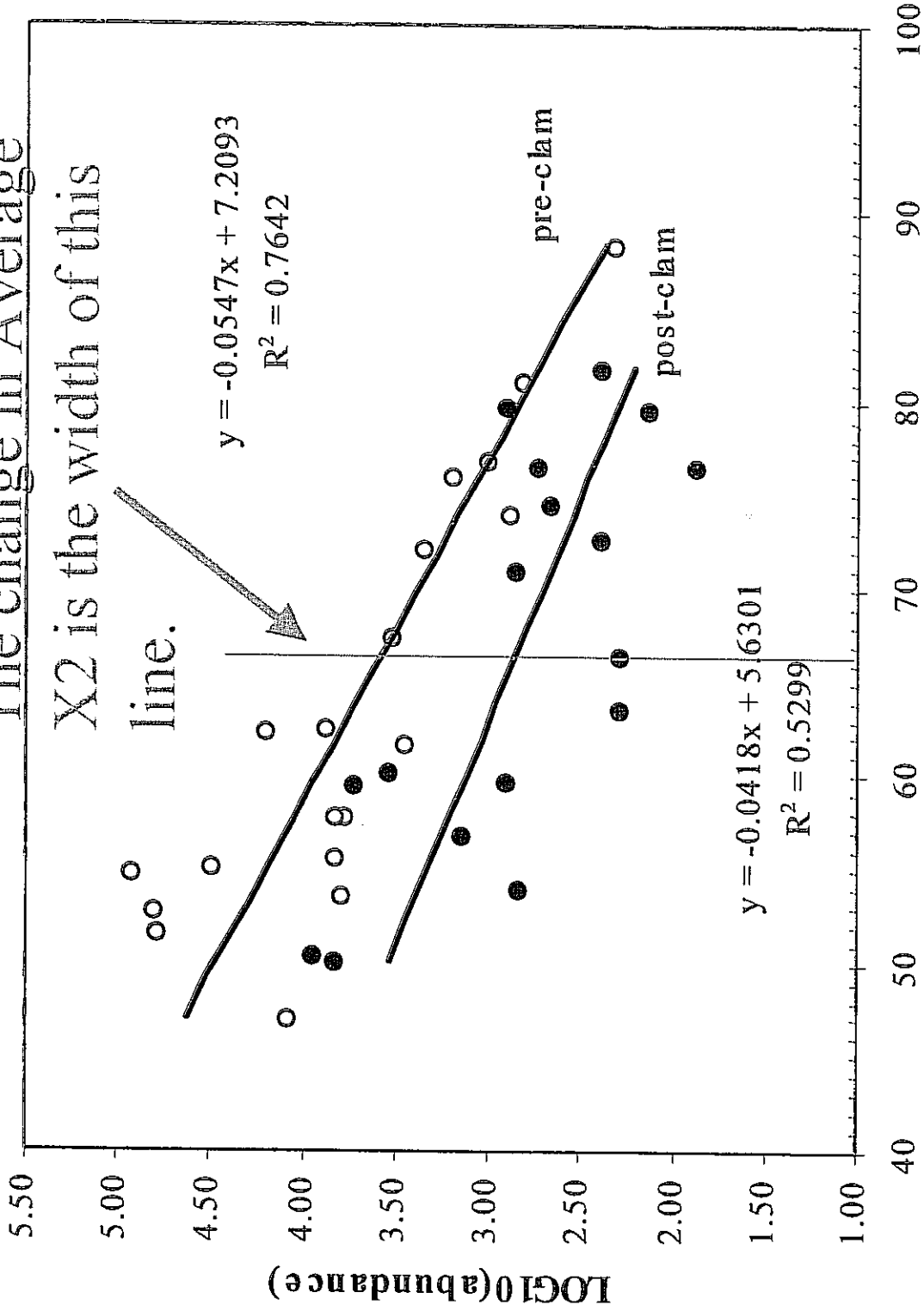
Change in Population Index per km change in Average X2 over the Entire Period



long fin smelt

The change in Average

X2 is the width of this line.



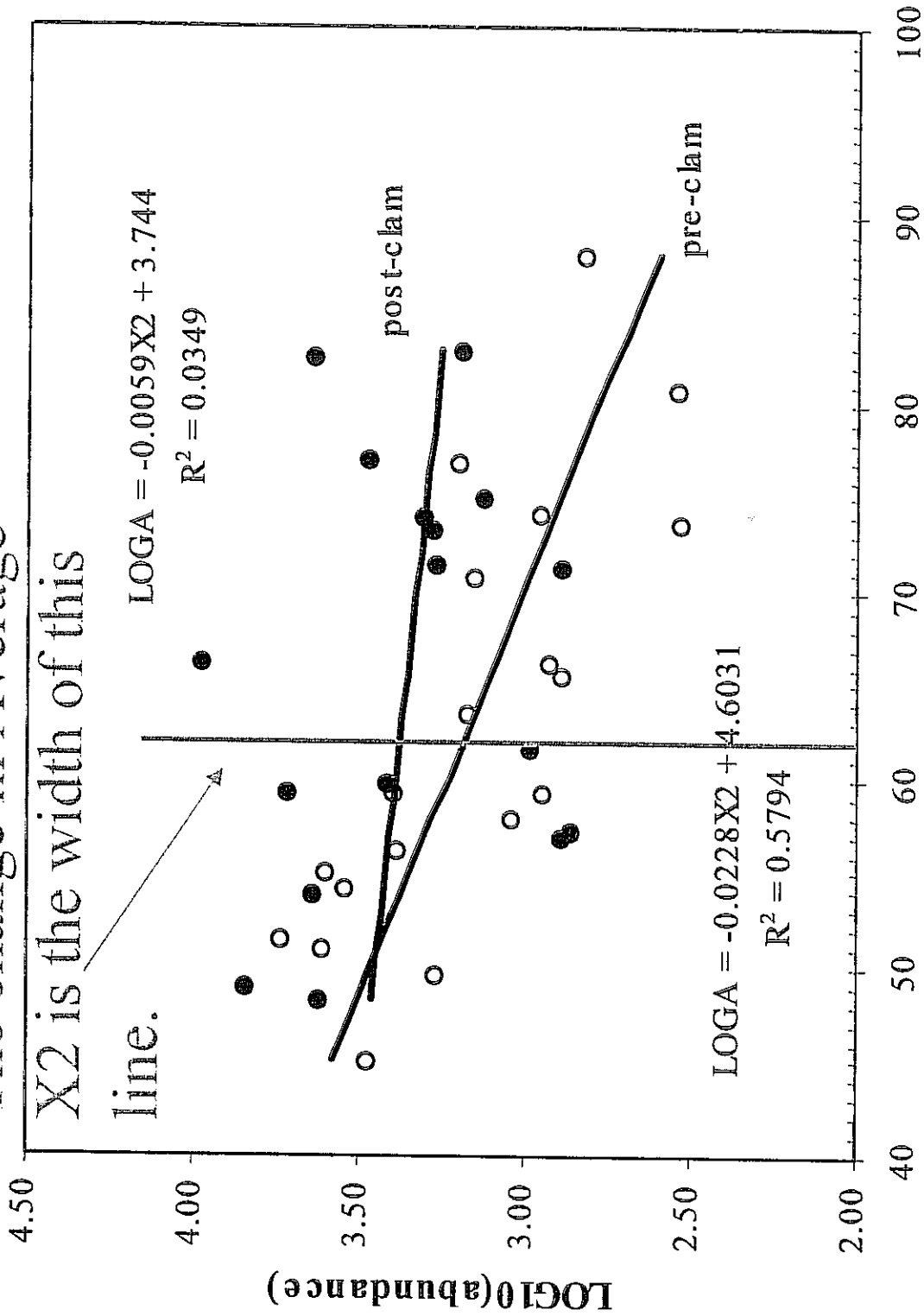
X2, km from Golden Gate

american shad

The change in Average

X2 is the width of this

line.



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18 Authority

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BEFORE THE
STATE WATER RESOURCES CONTROL BOARD

PERIODIC REVIEW OF THE 1995
WATER QUALITY CONTROL PLAN
FOR THE SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN DELTA
ESTUARY

CLOSING MEMORANDUM ON
FLEXING

I. INTRODUCTION

The San Luis & Delta-Mendota Water Authority, State Water Contractors, and Kern County Water Agency (Export Water Users) present this closing memorandum for the workshop held on August 31, 2005. This memorandum summarizes the presentation by the Export Water Users and responds to comments of other workshop participants.

II. THE PROPOSAL FOR A FLEX PROCESS

The Export Water Users seek three types of actions by the State Water Resources Control Board (SWRCB or State Water Board).

1 The first action seeks a change to the outflow objective to address over-compliance –
2 meeting the outflow objective more days in a particular month than required in the 1995 Water
3 Quality Control Plan (1995 WQCP). The change would recognize the difficulties inherent in
4 operating to meet the X2 outflow objective and not treat minor under-compliance in any month as
5 a violation of the objective as long as the under-compliance is made up the following month. See
6 SLDM-EXH-15C.

7 The second action seeks (a) continued flexibility of the export objective, (b) authority to
8 flex the outflow objective, and (c) authority to flex the Rio Vista objective. See SLDM-EXH-
9 15A; SLMD-EXH-15B.

10 The third action seeks to have the State Water Board impose a process the agencies
11 responsible for management of fishery and wildlife resources – United States Fish and Wildlife
12 Service (USFWS), the National Marine Fisheries Service (NMFS), and the California Department
13 of Fish and Game (DFG) (collectively, the Management Agencies) – and the agencies responsible
14 for operation of the Central Valley Project and State Water Project – United States Bureau of
15 Reclamation (Reclamation), and the California Department of Water Resources (DWR)
16 (collectively, the Project Agencies) – would follow when considering a proposal to flex either the
17 outflow, export, or Rio Vista objective. See SLDM-EXH-15D (as amended).

18 **A. Over-Compliance**

19 The flex games carried out by the parties disclosed just how difficult it is to precisely
20 operate to meet the X2 outflow objective. X2 was recommended for use as a fishery protection
21 objective based on *multi-month averages* that appeared to be correlated with fishery population
22 indices. In spite of the fact that the correlations are based on multi-month data, for-convenience
23 of implementation, X2 compliance (or non-compliance) is determined on a calendar month basis.
24 The location of X2 on the last day of the current month, combined with the current months
25 hydrology, determines how many days during the following month X2 must be maintained at a
26 given location.

27 Reclamation and DWR must then try to analyze future weather conditions, tides, winds,
28 etc., and determine how best to meet the X2 obligation over the next calendar month. In many

1 years X2 will be met with excess natural flows; but in years when stored water releases may also
2 be needed, the decisions become more difficult. Should the CVP/SWP immediately begin
3 releasing previously stored water? Should they rely on weather forecasts and trends that indicate
4 that the objective may be met with excess natural flows later in the month?

5 Prudent water management in the winter months with normally high precipitation would
6 seem to call for husbanding stored water resources and relying as much as possible on natural
7 flows associated with rainfall events. However, the result of misguessing can be a violation of
8 the CVP and SWP water rights terms and conditions. Therefore, the CVP and SWP operate very
9 conservatively, and, as a result and at a cost of may thousands of acre-feet of stored water, often
10 over-comply with the X2 objective at times when it cannot be made up in the subsequent month.

11 The Export Water Users are proposing a modified definition of what constitutes monthly
12 compliance that will allow the CVP and SWP to plan X2 operations in a manner that aims at
13 precise compliance with the objective. This can be accomplished by the simple act of providing a
14 compliance buffer that states that monthly compliance can occur within the month or within three
15 to five days after the end of the month. The Export Water Users suggest that the State Water
16 Board staff consult with the CVP/SWP operators to determine what minimum number of days
17 would provide an appropriate buffer.

18 **B. Flexing**

19 The 1995 Bay-Delta Plan established the concept that water quality objectives should be
20 allowed to flex when such an action can be carried out without significantly affecting the
21 beneficial use the objective was designed to protect. However, in 1995, this decision was only
22 applied to the export limit objective (although in limited circumstances the outflow objective may
23 also be relaxed).

24 Ten years later, the Export Water Users believe the time has come to add the X2 outflow
25 objective and the Rio Vista flow objective to the list of objective for which flexes can be
26 considered. For X2, in particular, the reservoir releases required in 2003 and 2004 absolutely
27 demonstrate that a process needs to be in place to, at least, consider whether stored water releases
28 of that magnitude are warranted given the resulting impacts on downstream flows, cold water

1 pools, and water badly needed to support the California economy. No one can or should try to
2 predict how those deliberations would turn out, but the structure needs to be in place to allow
3 them to occur.

4 **C. The Process**

5 The Export Water Users have provided the State Water Board with a decision tree that
6 establishes reasonable sideboard and creates a science-based process for considering flexes. The
7 process would be carried out as follows:

8 1. The Management and Project Agencies (collectively the "Agencies") shall meet to
9 determine whether a variation or flex of the outflow, export, or Rio Vista objective should
10 be considered:

- 11 A. Immediately before the relevant objective begins controlling Delta operations, and
12 B. If, during the time a particular objective is controlling Delta operations, there is a
13 change in the fishery or hydrologic conditions that existed at the time the objective
14 became controlling.

15 Full consideration of a flex will be initiated if, during any such consultation, any one of
16 the Agencies requests it.

17 2. When full consideration is initiated, the Agencies shall:

- 18 A. Develop an alternative or alternatives for how the objective could flex ("Action
19 Alternative(s)").
20 B. Consider for each Action Alternative how the water that would otherwise be
21 necessary to meet the objective ("saved water") would be subsequently used.
22 Saved water shall revert to the CVP and SWP for authorized uses, unless the
23 Management Agencies can provide a scientific basis showing a need by fish and/or
24 wildlife for additional water, in which case no more than 50 percent of the saved
25 water can be used for that (those) purpose(s).
26 C. In determining how saved water will be used, provide for multiple use of the saved
27 water whenever possible.
28 D. Provide science-based evaluations of a "no action" alternative and each Action
Alternative developed, including: (i) quantified estimates of population level
effects on fishery resources, (ii) quantitative estimates of effects on water supply
and water quality, and (iii) quantified estimates of uncertainty for both population
level, water supply, and water quality effects.
E. Not propose an Action Alternative that:
i. During the February through June period (other than during a VAMP
flow/pumping restriction), and for the export objective, would cause an
increase in the E/I ratio of more than ten percent (i.e., 35% to 45%).
ii. During the VAMP 31-day pulse period, and for export objective, would
cause pumping to exceed 200% of 3-day running average of San Joaquin
River flow at Vernalis.
iii. During the July through January period and for the export objective, would
cause an increase in the E/I ratio of more than ten percent (i.e., 65% to

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75%).

- iv. For the outflow objective, would (a) occur when the Port Chicago standard is not triggered, (b) cause Delta outflow to fall below 20,000 cfs, or (c) cause the February through June average location of X2 to move more than one kilometer further upstream from the Golden Gate Bridge.
- vi. For the Rio Vista objective, would cause the minimum monthly average flow rate to be reduced by more than 1,000 cfs.
- vi. For any objective, would impair the ability of Reclamation or DWR to meet their respective contractual obligations.
- vii. For any objective, would cause a significant adverse environmental effect.

3. If the Agencies agree on a single Action Alternative, the Agencies shall immediately notify the Executive Officer of the SWRCB of the decision. The Agencies shall, within 24 hours of reaching the decision, provide the Executive Officer with a written description of the Action Alternative and the reason for the decision. The Agencies may begin implementing the Action Alternative 24 hours after the Agencies notified the Executive Officer. If the Executive Officer does not object to the decision within 5 days, the decision by the Agencies will remain in effect. If the Action Alternative is implemented 24 hours after the Agencies provided the Executive Officer notice, but the Executive Officer objects to the decision within the 5-day period, the SWRCB shall consider the CVP and SWP in compliance with the objective during any under-compliance that results directly or indirectly from implementing the Action Alternative.

4. On or before January 1 of each year, the Agencies shall prepare and transmit to the Executive Officer of the SWRCB a report summarizing flexing activities, accounting for the changed water use, describing how the saved water was allocated among beneficial uses, and estimating the effects on beneficial uses of flexing over the course of the prior year, consistent with the requirements under paragraph 2.¹ The report shall provide the information required under paragraph 2 for each occasion when full consideration of a flex was initiated, whether or not the Agencies agreed on an Action Alternative. For instances when full consideration of a flex was initiated but agreement not reached, a majority and a minority report may be included in the report. As soon as possible, the Executive Officer shall make the report available for public review.

5. The Agencies shall include one SWRCB staff member who may participate in, but not vote on, all deliberations required to reach a decision on an Action Alternative. The funding for this staff member shall be provided by the Agencies. The staff member shall:
- A. Participate in all actions required under paragraphs 2 and 4.
 - B. Assist the Executive Officer of the SWRCB in determining whether or not to object to an Action Alternative.
 - C. Assist in developing and amendments or supplements to this Decision Tree.

III. RESPONSE TO COMMENTS

Generally, the comments made that recommend no change to the 1995 WQCP to address

¹ The Export Water Users would also support a requirement that the Agencies provide the State Water Board with a report after each flex consideration.

1 flexibility fall within three categories. They request no change because of: (1) concerns with the
2 decline in pelagic organisms; (2) a belief that there is no need for flexibility, and (3) a belief that
3 technical information shows significant effects of a flex on fish and wildlife. As is shown below,
4 none of those comments provide any justification for the State Water Board to reject a flex
5 process.

6 **A. The Decline In Pelagic Organisms In Fact Supports The Flex Process**

7 Through written comments, the Water Operations Management Team, in WOMT-EXH-
8 02, and the NMFS, in NOAA-EXH-18, asked the State Water Board to delay developing a flex
9 process at this time because of the recent decline in pelagic organisms. Representatives from the
10 Management Agencies presented oral comments at the workshop, expressing the same concern.
11 As suggested by the questions of Chairman Baggett during the workshop, those concerns simply
12 make no sense when considering the proposal by the Export Water Users.

13 As the Export Water Users have stated repeatedly, the proposal before the State Water
14 Board, if adopted, would not command any change in the objectives. It would only provide the
15 Agencies the ability to propose a flex and, more important, to provide any one of the Agencies the
16 power to preclude any such proposal. They will, however, have to explain to the State Water
17 Board and the public why they acted as they did.

18 Ironically, USFWS, less than one year ago, made presentations that explained a process it
19 adopted during ESA consultations, which is almost identical to that which the Export Water Users
20 advance in this forum. Those presentations, made as part of CalFed's 2004 EWA Technical
21 Review Panel Meeting Presentations and 2004 EWA Technical Workshop Presentations, are
22 respectively entitled "Interface Of Policy And Science: The Evolving Dynamic Between
23 Prescriptive Standards And Flexible Tools" and "An Introduction To The Delta Smelt Risk
24 Assessment Matrix."² The presentations explained a change in approach from the 1995 Delta
25 smelt biological opinion to the 2004 biological opinion on CVP/SWP operations. The change
26 abandoned the prescriptive approach contained in the 1995 opinion and adopted, in its place, the

27 ² Copies of the presentations are attached hereto as Exhibits A and B, but are also found at
28 http://science.calwater.ca.gov/workshop/ewa_presentations.shtml#tech_04.

1 "Delta Smelt Risk Assessment Matrix" – a new decision process to be "[b]ased on latest
2 knowledge of smelt", "developed using an iterative, consensus process", that "codified [a]
3 flexible . . . approach." Interface Of Policy And Science at slide 10.

4 Just a cursory review of these presentations shows that the Delta Smelt Risk Assessment
5 Matrix provides a flexible process, very similar to that which the Export Water Users propose in
6 their Decision Tree. Both are presumably premised on science-based guidelines or sideboards;
7 both call for an iterative process; both are flexible, allowing for changes in the process without
8 changing the underlying document, both are intended to provide opportunities to improve water
9 supply reliability. Presumably, a process that is good for delta smelt when considering the
10 impacts of CVP and SWP operations on ESA listed species should be good enough when
11 considering how to best implement water quality objectives.

12 **B. Significant Information Supports The Potential Need For Flexibility**

13 The Bay Institute claimed during the workshop that there is no demonstrated need or
14 biological basis that justifies flexibility. Neither statement is true. The need for flexibility is
15 clear and strong.

16 1. Fish Issues

17 The January 2005 report entitled "Impacts on Lower American River Salmonids and
18 Recommendations Associated with Folsom Reservoir Operations to Meet Delta Water Quality
19 Objectives and Demands" ("Impacts Report"), WF-EXH-01, documents actual and predicts
20 potential impacts on fish from releases of water to meet water quality objectives.

21 For example, the Impacts Report explains that changes in flow rates and water levels in
22 rivers can adversely impact salmonids. In particular, rapid reductions in flow rates and water
23 levels after releases can impact salmonid embryos in redds by dewatering and/or isolating those
24 redds. WF-EXH-01 at 3. Those same flow reductions can also trap juvenile salmonids in
25 isolated pools of water, which no longer connect to the main river, and strand them on dewatered
26 gravel bars. *Id.* Indeed, releases in February 2003 were reported to have caused in the American
27 River dewatering and isolation of steelhead redds, and stranding of up to 10,000 Chinook salmon
28 fry. *Id.* at 11. Also releases beginning in April 2004 were reported to have caused in the

1 American River the isolation of juvenile Chinook salmon and steelhead. *Id.* at 13.

2 At times, releases to meet Delta water quality objectives also raise concerns because of the
3 potential reduced "water available for instream flows during the Chinook salmon adult
4 immigration and spawning period (September through December)," *id.* at 4, and quantity of cold
5 water in reservoirs, which reduces the ability to manage water temperatures to benefit the
6 fisheries. *Id.* The Impact Report indicates that these factors may have contributed in 2001 to the
7 approximately 67 percent pre-spawning mortality rate for fall-run Chinook salmon in the
8 American River. *Id.* at 7.

9 The impacts to fish caused by the water quality objectives have been recognized by more
10 than just the Water Forum. For example, the Sacramento Bee published articles on the impacts to
11 fish caused in 2003 by the operations of the CVP to meet Delta water quality objectives. In
12 particular, one article notes:

13 Last month, the Bureau of Reclamation increased flows in the American River
14 from 3,500 to 5,500 cubic feet per second. Bureau officials say the extra flows
15 prevented saltwater from creeping up the Delta and violating standards set in the
Bay-Delta Accord, a state-federal pact for restoring the Delta.

16 "Water Conservation Efforts in Sacramento, Calif., Area Kill Thousands of Fish", dated March 5,
17 2003, a copy of which is attached as Exhibit C.

18 Another article explains that as a result of the operation to meet the water quality
19 objective:

20 [The higher flows] flooded gravel bars along the American River that became
21 habitat for spawning steelhead trout, an endangered species. The fish laid their
eggs in the gravel, only to have the river recede a few weeks later.

22 "Federal Officials Revisit Sacramento, Calif.-Area Habitat Protections", dated March 6, 2003, a
23 copy of which is attached as Exhibit D. The article provides further:

24 The deaths of thousands of young fish in the American River are prompting some
25 environmentalists and federal officials to rethink water allocations that favor
habitat in the Sacramento-San Joaquin Delta over tributaries upstream.

26 *Id.*

27 Indeed, even The Bay Institute acknowledged these potential effects in papers filed with
28

1 the State Water Board, providing, in part:

2 Flow fluctuations as a result of these releases have the potential to dewater and
3 isolate salmon redds; strand fry; isolate juveniles; and deplete cold water pool
storage. In both of these years [2003, 2004] some adverse impacts were observed.

4 BAY-EXH-04 at p. 11.

5 The State Water Board itself has also recognized the potential impacts in "Staff Report,
6 Periodic Review Of The 1995 Water Quality Control Plan For The San Francisco
7 Bay/Sacramento San Joaquin Delta Estuary", adopted by the State Water Board in Resolution
8 2004 - 0062. The Report states:

9 [I]n some years, releasing water for Delta outflow can increase river stages such
10 that spawning salmonids, especially steelhead trout, utilize spawning gravels in
11 areas that are only temporarily inundated. When the Delta outflow release ends,
12 river stages are reduced, redds may be dewatered and fry can be stranded. These
parties suggest that an adaptive management system may be helpful in avoiding
13 this kind of situation, and would be possible if the objectives were modified to
allow more flexibility.

14 Report at p. 44.

15 2. Water Supply Issues

16 The comments of The Bay Institute also ignore the broader public interests the State
17 Water Board must consider. The Bay Institute assumes that the only interest of the State Water
18 Board is fish and wildlife. That is obviously not true. The State Water Board must set objectives
19 "to attain the goal of the highest water quality which is reasonable, considering all demands being
20 made and to be made on those waters and the total value involved, beneficial and detrimental,
21 economic and social, tangible and intangible." 1995 WQCP at 3-4.

22 That principle applies to implementation of existing objectives as well. When looking at
23 all of the uses of Delta water, it becomes clear that in addition to providing water for broader fish
24 and wildlife needs, flexibility is a tool that could be used to address existing unmet water needs
25 for other beneficial uses. For example, Bulletin 160-98 predicts that by 2020, the average water
26 shortage for irrigation, municipal, industrial and environmental uses will be 2,400,000 acre-feet.
27 Bulletin 160-98 at Appendix 1A. That shortfall is expected to be even greater in dryer years. If
28 the existing objectives can be implemented more flexibly to achieve similar results while saving

1 water for other purposes, the State Board is authorized, if not obligated, to provide that flexibility.
2 Water Code §§ 13000, 13241. The flexing process advanced by the Export Water Users can
3 provide a mechanism that allows demands being made and to be made on Delta water to be better
4 met, while still maintaining a high level of protection for fish and water quality. In fact, as the
5 gaming demonstrated, at times, flexing of objectives could "save" significant amounts of water,
6 with relatively minimal, if any, adverse impact to the beneficial uses of Delta water; saved water
7 that could be available to the CVP and SWP for their authorized purposes as well as for other
8 fishery needs.

9 3. Riskier Operations Is Not The Solution

10 The sections above demonstrate that there is a need to address issues raised by the
11 outflow, export and Rio Vista objectives. The true difference of opinion thus lies in how the
12 issues should be addressed. The Export Water Users seek to provide the Management and Project
13 Agencies with a tool that will allow flexes to be considered because they believe flexibility can in
14 many circumstances enhance protection of the totality of the beneficial uses of Delta water. The
15 information presented by the Export Water Users supports the conclusion that all uses of water
16 will ultimately benefit from flexibility.

17 Others apparently believe that the benefits provided by flexing should be accomplished by
18 different, more risky CVP and SWP operations. *See, e.g.,* The Bay Institute June 3, 2005 Letter,
19 Appendix C: "Alternative water management strategies (e.g., earlier increases in releases to
20 maintain compliance via EC) could have avoided the extreme flow fluctuations and upstream
21 impacts....").

22 In responding to these types of claims one needs to keep in mind that the X2 standard is
23 different than all other D-1641 requirements. The very large flows required to meet the X2
24 objective at Port Chicago, combined with the difficulty of predicting salinity responses to
25 hydrologic changes so far down the estuary, can force the CVP/SWP operators to make large
26 changes in either releases or export rates at a time when background conditions are also changing
27 rapidly. Since the Port Chicago X2 compliance can require such a large amount of CVP/SWP
28 water, the operators naturally want to respond in as efficient a manner as possible. They not only

1 have a need to meet the objective, but also to meet it in a manner that does not cause an
2 unacceptable risk to meeting other project purposes.

3 The Export Water Users have reviewed the operations of the CVP/SWP and the
4 compliance actions they took the last two years in order to comply with Port Chicago X2 and
5 believe that the actions taken were appropriate and represented the best operations possible given
6 the circumstances at the time. Therefore, the Export Water Users take strong exception to the
7 Bay Institutes comments.

8 The major problem with The Bay Institutes position is that it is premised on the false
9 notion that the CVP/SWP operators have the luxury of operating in hindsight. Obviously, they do
10 not. They only know what has happened, not what will happen tomorrow, next week, or next
11 month. While they have forecasts of what might happen as far as the weather, river flows, and
12 water quality conditions, etc., those factors obviously vary widely during the period of concern.
13 Contrary to what The Bay Institute suggests, CVP/SWP operators cannot wait to see how the
14 month turns out and then go back in time and tweak their operations only the minimum amount to
15 comply with the objective, nor can they look ahead a week or two to see that the electric
16 conductivity is going to be at a given location, and then retroactively make operational changes to
17 releases.

18 The Bay Institute also suggests that if the CVP/SWP operators would only make decisions
19 sooner, they could avoid upstream impacts. Since the upstream reservoirs that would be required
20 to make earlier changes are 3-5 days (travel time for water) away from the Delta, the CVP/SWP
21 operators once again have to be able to see into the future in order to have the correct amount of
22 water reach the Delta in a timely fashion. Not only is such a precise operation not possible
23 because of the inability to foresee the future, but The Bay Institute is proposing a type of
24 operation that will more often than not waste water, since the further into the future the
25 CVP/SWP operators need to try to predict operational conditions the more uncertain conditions
26 become.³ In other words, because of the uncertainties in future hydrology, the "Monday morning

27 ³ The Bay Institute also states: "In 2002, use of the Port Chicago EC trigger eliminated high
28 flows in all four months specified by the PMI." They also state that this was the year that many
pelagic fish species declined and so it insinuates that if Port Chicago X2 would have been further

1 quarterbacking" The Bay Institute has done cannot apply to real-time decision making, unless
2 significant risk were place on water supplies; water supplies available for all authorized uses.

3 C. A General Belief That Technical Information Shows Significant Effects Of A
4 Flex On Fish And Wildlife Provides No Support For A Rejection Of The Flex
5 Process

6 The Bay Institute spent a great deal of time during the workshop presenting its assertion
7 that flexibility will adversely impact fish and wildlife. Its presentation suggested that if the State
8 Water Board were to accept the proposal by the Export Water Users, there will be reductions in
9 longfin smelt, Bay shrimp, and Pacific herring of 20%, 10%, and 8%, respectively. BAY-EXH-
10 15. The State Water Board should treat this as the red herring that it is. The suggestion by The
11 Bay Institute simply ignores the substance of the Export Water Users' proposal.

12 Although stated numerous times, the central purpose of the proposal obviously bears
13 repeating: to introduce a process for considering flexes, not to mandate a flex. The process is not
14 predisposed to a particular outcome. In fact, the process explicitly allows, as an initial protection,
15 any Agency to veto a proposed flex action, for any reason. As an additional layer of protection,
16 the State Water Board can veto any flex action approved by the Agencies. If those protections
17 were not sufficient, there are other important protections, inherent in the process – the sideboards.
18 The Bay Institute references one – the 1-kilometer limit on a change to the location of X2, but
19 that is not the only parameter. Additional constraints on the flex actions that are proposed
20 include:

- 21 • The general environmental protection that precludes any alternative that
22 would cause a significant adverse environmental effect.
- 23 • The general water quality protection that precludes any alternative that
24 causes Delta outflow to fall below 20,000 cfs,
- 25 • The general water supply protection that precludes any alternative that
26 would impair the ability of Reclamation or DWR to meet their respective
27 contractual obligations.

28 downstream that this decline would not have occurred. CVP/SWP operational experts employed
by the Export Water Users estimated, based on the graphs displayed in The Bay Institute's
presentation, that maintaining X2 at Port Chicago for the specified days would have cost about
1,500,000 acre-feet of water.

1 In other words, the Export Water Users would not expect a flex to be approved that impacted a
2 species' population index by such large numbers unless an overwhelming need existed elsewhere
3 for the water saved and it could be shown that such a one time impact would not have a
4 significant impact on the species. The Bay Institutes argument ignores all the sideboards and
5 other protections that are built into the flexing process.

6 1. The Letter From The United States Environmental Protection Agency Adds
7 Nothing

8 The letter by the United States Environmental Protection Agency (EPA) refers to the X2
9 standard as a "broad ecosystem standard." The Export Water Users agree that X2 has been so
10 characterized. However, the sole justification for this characterization is the abundance-X2
11 relationships for several estuarine species, some adults and some at lower life stages. Without
12 these relationships, the characterization would be baseless. More important, the "broad
13 ecosystem effects" cannot be separated from the X2-abundance relationships. It is not, as EPA
14 and others have asserted, that there are the X2-abundance relationships and "broad ecosystem
15 effects." The former is the only evidence of the latter. Thus, the evidence is that the X2-
16 abundance relationships make it possible to quantify effects.

17 EPA also asserts that the "structure" of the X2 standard "does not lend itself to real time
18 manipulation." EPA implies that there is a cause and effect relationship between the structure of
19 the objective and the inadvisability of real time manipulation. No basis for this assertion is
20 provided. It also makes no sense. Substantial real time manipulation of outflows, involving
21 hundreds of thousands of acre-feet of stored water, is an all too common means of compliance
22 with the objective. Indeed, historical data on abundance in combination with real time data on
23 flows and reservoir storage can be used to evaluate real time decisions about flexing X2. Real
24 time data could also be made available for upstream effects. EPA's position is also undermined
25 by the fact that it readily uses the abundance-X2 relationships to justify the X2 standard and to
26 argue that it is, by virtue of those relationships, a "broad ecosystem standard." It is thus
27 surprising, EPA is now unwilling to acknowledge that these relationships can be used to estimate
28 the abundance effects of changes in Delta outflow.

1 EPA argues further that the recent decline in pelagic species (actually, a few pelagic
2 species) makes it "inadvisable to trade lower protection of the in-Delta aquatic ecosystem
3 (targeted by the X2 standard) for higher protection of relatively healthier migrating salmonids
4 upstream." First, if there is a problem with pelagic fish in the Delta and if the cause(s) of this
5 problem is unknown, it is logical to provide the greatest flexibility to respond to whatever causes
6 might be identified. For example, less Delta outflow (higher X2) might be desirable to manage
7 an alien species sensitive to salinity. It might turn out to be desirable to save water in upstream
8 reservoirs to offset export curtailments necessary to reduce delta smelt entrainment. In addition,
9 it is possible that the decline in pelagic fish abundance might cause the abundance-X2
10 relationships, that are the basis for the X2 standard, to break down. This would render the X2
11 standard as baseless and might give rise to the need for flexibility in how that standard is applied.

12 As noted above, EPA and others assert that "advocates of X2 flexing have not defined a
13 clear problem that requires this additional flexibility in system regulation." However, in addition
14 to the information presented above, modeling shows that when the potential effects of flexing are
15 quantified, they often turn out to be so small as to be undetectable, especially when Delta outflow
16 is relatively high. It is in part for that reason, the Export Water Users recommend a flex process
17 be put in place for the outflow objective. Maybe EPA views the release of 250,000 acre-feet of
18 water from upstream reservoirs to achieve a 4% (with uncertainty in the range of 1-2%) increase
19 in longfin smelt abundance (and even less effect on other adult species) as not a problem since it
20 does not have the State Water Board's responsibility for balancing California's water needs.
21 Water Code § 13000. However, releases with such relatively small effects on unlisted species
22 could be a matter of serious concern to the State Water Board.

23 In sum, it is most ironic that EPA bases its support for the X2 standard on the statistically
24 significant relationships of abundance of selected estuarine species with months-long averages of
25 X2, but now argues against flexing by saying that those same relationships cannot be used to
26 evaluate how abundance changes with changes in average X2. Quite simply, EPA's positions
27 cannot be reconciled. The assertions made by EPA seem to arise from a dogged adherence to
28 rigid and perhaps counter-productive implementation of the X2 standard as is, without regard to

1 reason, logic, or the additional information that has been developed since the standard was first
2 implemented.

3 **IV. CONCLUSION**

4 The proposal before the State Water Board provides the Agencies the ability to consider
5 the implementation strategy that best meets the fishery protection purpose of the X2 objective. It
6 avoids over-compliance. The Export Water Users ask the State Water Board to add to the 1995
7 WQCP the ability to "carry-over" unmet outflow days from one month to the next. That will
8 reduce the over compliance with the objective, and allow the CVP and SWP to be operated in a
9 more efficient manner. As a result, it will be less likely that the quantity of water used for
10 outflow will exceed that required to provide the level of protection the State Water Board deemed
11 reasonable in the 1995 WQCP.

12 It would also have the State Water Board maintain, in terms of the export objective, and
13 interject, for the outflow and Rio Vista objective, in the 1995 WQCP implementation flexibility.
14 The ability to flex allows for adaptive management of objectives, as our understanding of the
15 environment changes, as the environment itself changes and demand for Delta water changes.
16 The ability of any Agency to veto a proposed flex provides a high level of protection for the
17 resources those agencies are charged with defending. The proposed "sideboards" for any flex
18 action provides the first level of assurance for the State Water Board that no flex impairs overall
19 protection for beneficial uses. A second level of assurance is provided by the proposed
20 involvement by a State Water Board staff member, and the State Water Board ultimate power to
21 veto an flex action, a decision that would be made with the assistance of its staff member.

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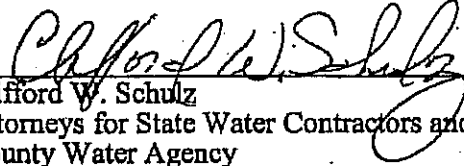
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In sum, the record before the State Water Board is clear. Removal of the existing risk of over-compliance will reduce the risk of a waste of water. Further, the authority to flex the export, outflow and Rio Vista objectives, with the process presented by the Export Water Users, will, at a minimum, maintain the existing level of protection, and could if the appropriate circumstances arise, at a maximum, improve conditions for all uses of Delta water.

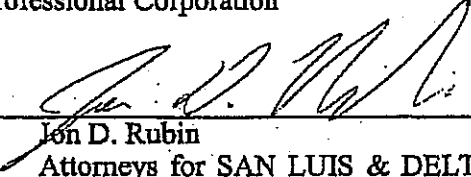
Dated: September 19, 2005

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10 BEFORE THE

11 STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES
CONTROL BOARD
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DIV OF WATER RIGHTS
SACRAMENTO

12 PERIODIC REVIEW OF THE 1995
13 WATER QUALITY CONTROL PLAN
14 FOR THE SAN FRANCISCO BAY/
15 SACRAMENTO-SAN JOAQUIN DELTA
16 ESTUARY

17 Memorandum Supplementing Information and
18 Providing Additional Comments on the
19 Chloride Objectives, Compliance Location at
20 Contra Costa Canal at Pumping Plant No. 1,
21 and Potential New Objectives

22 The San Luis & Delta-Mendota Water Authority (Authority) submits this memorandum
23 pursuant to the Notice of Public Workshop issued by the State Water Resources Control Board
24 (Water Board), as revised on September 17, 2004 and supplemented on December 22, 2004. This
25 memorandum summarize and supplement the information presented on the following issues at the
26 workshop for the periodic review of the 1995 Water Quality Control Plan for the San Francisco
27 Bay/Sacramento-San Joaquin Delta Estuary (1995 WQCP):

28 Should the [Water Board] amend the value or description of the 150 mg/l Chloride
Objective in the Water Quality Objectives for Municipal and Industrial Beneficial
Uses (Table 1 of the 1995 Plan)? How should the value or description be modified
and what are the scientific and legal arguments in support of and against such
modifications?

Should the [Water Board] amend Compliance Location C-5 (CHCCC06) in the
Water Quality Objectives for the Municipal and Industrial Beneficial Uses
(Table 1 of the 1995 Plan)? This location is at the entrance to the Contra Canal at
Pumping Plant No. 1. How should the location be modified and what are the
scientific and legal arguments in support of and against such a modification?

Should the [Water Board] adopt new Water Quality Objectives for the Municipal
and Industrial Beneficial Uses [Table 1 of the 1995 Plan] for constituents such as
bromides and total organic carbons or other precursors of disinfection by -

1 products? What are the scientific and legal arguments in support of and against
2 the adoption of such measures?

3 September 17, 2004 Revised Notice of Public Workshop at pp. 3-4.

4 **I. CHLORIDE OBJECTIVE COMPLIANCE LOCATION**

5 **A. A Need Exists For The Water Board To Add A New Compliance Point**

6 The Authority supports the recommendations of the United States Department of the
7 Interior (Interior), California Department of Water Resources (DWR), and the Contra Costa
8 Water District (CCWD) that the Water Board establish an additional compliance point in Old
9 River, near Holland Tract. The basis for the additional compliance point is simple. Currently, the
10 United States Bureau of Reclamation (Reclamation) and DWR are responsible for maintaining
11 chloride levels in Rock Slough at Pumping Plant No. 1 (Pumping Plant No. 1). At times,
12 however, neither Reclamation can operate the CVP nor DWR can operate SWP to achieve the
13 required levels.

14 As recognized by CCWD, CCWD-EXH-07, seepage and discharges of drainage from the
15 lands surrounding Rock Slough between Old River and Pumping Plant No. 1 degrade the quality
16 of water that flows into Rock Slough from Old River. *See also* DWR-EXH-13. Prior to the
17 construction of Los Vaqueros Reservoir, operation of Pumping Plant No. 1 frequently mitigated
18 those adverse impacts by moving more of the higher quality water from Old River through the
19 Slough. However, since the Los Vaqueros project was completed, CCWD has changed its
20 operation of the Pumping Plant No. 1 in a manner that causes, in general, lower pumping rates
21 than those that existed historically. At those times, the CVP and SWP cannot be operated to
22 achieve the levels of water quality at Pumping Plant No. 1 that is demanded by the 1995 WQCP.
23 *See detailed discussion below.* A new compliance point in Old River, near Holland Tract (outside
24 of Rock Slough) will allow Reclamation and DWR to operate to an objective that they have the
25 ability to meet.

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1 **B. Parameters Must Be Set To Control When (1) The Compliance Location**
2 **Changes From The Existing Location To A New Location And (2) The**
3 **Objectives That Should Exist At That New Compliance Point**

4 Because no party disputes the need for a new compliance point, the substantive issues
5 before the Water Board that are in dispute are: (1) when should the compliance location change
6 from the existing location at Pumping Plant No. 1 to the new location in Old River, near Holland
7 Tract, and (2) when the compliance location is in Old River, near Holland Tract, to what objective
8 would be justifiable.

9 1. The Compliance Location Should Move From Pumping Plant No. 1 To Old
10 River, Near Holland Tract When On A Three Day Average Pumping At
11 Pumping Plant No. 1 Falls Below 125 Cubic Feet Per Second And The
12 Existing, Applicable Objective Is Not Being Achieved

13 In response to the question "when should the compliance location change from the
14 existing location at Pumping Plant No. 1 to the new location in Old River, near Holland Tract",
15 Reclamation and DWR respond by recommending that the compliance point move from Pumping
16 Plant No. 1 to Old River, near Holland Tract when the three-day pumping average at Pumping
17 Plant No. 1 falls below 70 cfs and the objective at that location is not being achieved. To that
18 same question, CCWD recommends that the compliance point move to Old River, near Holland
19 Tract when Pumping Plant No. 1 is operating at less than 20 cfs, based on a three-day average and
20 the objective at that location is not being achieved. Unfortunately, the rates recommend by
21 Reclamation, DWR and CCWD are below what appears necessary to maintain an appropriate
22 correlation between water quality in Old River, near Holland Tract and water quality at Pumping
23 Plant No. 1. In other words, the rates are too low to be assured that operations of the CVP and
24 SWP can be responsible for the objective at Pumping Plant No. 1, without significant adverse
25 impacts from factors outside of the control of either Reclamation or DWR.

26 The Authority recommends that the Old River, near Holland Tract compliance point be
27 used when Pumping Plant No. 1 is operating at less than 125 cfs on a three-day average and the
28 objective at that location is not being achieved. The bases for that recommendation are found in
the data presented in attachments 5 and 6 to DWR-EXH-13. Attachment 5 shows that, at
Pumping Plant No. 1, chloride measurements and diversion rates tend to have an inverse

1 relationship; the higher the diversion rate, the lower the chloride measurement. As noted above,
2 the relationship is due, in large part, to CCWD's operation of Pumping Plant No. 1 and seepage
3 and discharges of drainage from the lands surrounding Rock Slough. CCWD-EXH-07.
4 Attachment 6 shows the correlation between electrical conductivity at Pumping Plant No. 1 and in
5 Old River, near Holland Tract under various Pumping Plant No. 1 diversion rates. The data show
6 that at pumping rates below 125 cfs, there exist more significant differences between the
7 electrical conductivity at Pumping Plant No. 1 and Old River, near Holland Tract.¹ Again, those
8 differences are due to factors outside of the control of Reclamation or DWR.

9 Accordingly, a requirement that the CVP and SWP operate to maintain water quality at
10 the existing compliance point during periods of low diversion rates at Pumping Plant No. 1 would
11 be inappropriate. It is for that reason the Authority recommends that the chloride objective be
12 measured at the new compliance point in Old River, near Holland Tract during all periods in
13 which diversion rates at Pumping Plant No. 1 fall below a three-day average of 125 cfs and the
14 applicable chloride level at the existing compliance point is not being achieved.

15 2. The Objective For A Compliance Location In Old River, Near Holland
16 Tract, Should Be 1.0 Ms/Cm From October Through September, When
17 The 250 mg/l Chloride Objective Would Have Otherwise Controlled, And
18 0.7 Ms/Cm, When The 150 mg/l Chloride Objective Would Have
19 Otherwise Controlled

20 If the Water Board orders the use of a compliance point in Old River, near Holland Tract
21 under certain conditions, the Water Board should set: (1) an objective of 1.0 mS/cm when the 250
22 mg/L chloride objective would have otherwise controlled, and (2) an objective of 0.7 mS/cm
23 when the 150 mg/L chloride objective would have otherwise controlled.² As noted above, the

24 ¹ It would appear appropriate for the Water Board to err on this side of caution, setting a higher
25 pumping rate as a trigger to move to a compliance point in Old River, near Holland Tract. If a
26 rate is set too low, the existing circumstance will persist – the objective at Pumping Plant No. 1
27 will remain at times when neither Reclamation nor DWR are responsible for the lower quality
28 water at Pumping Plant No. 1, as compared to the quality in Old River. If CCWD or Reclamation
and DWR are correct and a lower rate could be appropriate, presumably either the applicable
objective will be met at Pumping Plant No. 1 or the CVP and SWP will be operating to meet an
electrical conductivity in Old River, near Holland Tract that provides an adequate level of
protection. See discussion under B.2, below.

² If accepted by the Water Board, a day would count towards the 150 mg/L objective if (1)

1 inability of either Reclamation or DWR to operate to meet the objective at the Pumping Plant No.
2 1 results from degradation in Rock Slough due to seepage and local drainage and a change in
3 operations when CCWD completed the Los Vaqueros project. CCWD-EXH-07. Were the Water
4 Board to set the objective of 1.0 mS/cm and 0.7 mS/cm when the 250 mg/L chloride and 150
5 mg/L chloride would have respectively otherwise applied, and order Reclamation and DWR to
6 operate to the new objectives, Reclamation and DWR would be required to operate the CVP and
7 SWP to provide a level of water quality that would achieve the existing objectives, but for the
8 seepage and discharges; circumstances outside of the control of either Reclamation or DWR.

9 Attachment 8 to DWR-EXH-13 depicts the relationship between chlorides at Pumping
10 Plant No. 1 and electrical conductivity in Old River, near Holland Tract. Attachment 8 shows
11 that prior to the Los Vaqueros project, a water quality of 250 mg/L chloride at Pumping Plant
12 No. 1 equated to a water quality of approximately 1.0 mS/cm in Old River, near Holland Tract.
13 Similarly, the attachment shows that prior to the Los Vaqueros project, a water quality of 150
14 mg/L chloride at Pumping Plant No. 1 equated to a water quality of approximately 0.7 mS/cm in
15 Old River, near Holland Tract. It is for that reason, the new compliance point should have
16 objectives of 1.0 mS/cm and 0.7 mS/cm when the 250 mg/L chloride and 150 mg/L chloride,
17 respectively, would have applied.

18 Despite the correlations between (1) a water quality of 250 mS/L chloride at the Pumping
19 Plant No. 1 and 1.0 mS/cm in Old River, near Holland Tract, and (2) a water quality of 150 mS/L
20 chloride at the Pumping Plant No. 1 and 0.7 mS/cm in Old River, near Holland Tract, CCWD
21 proposes that the electrical conductivity measurements in Old River, near Holland Tract must be
22 lower. CCWD proposes a 0.94 and 0.56 electrical conductivity in Old River, near Holland Tract
23 as the respective equivalent of the 250 mg/L and 150 mg/L chloride objectives at Pumping Plant
24 No. 1. Those levels of electrical conductivity, however, ignore the relationships reflected in
25

26 CCWD is pumping at Pumping Plant No. 1 below 125 cfs (70 cfs if accepting the
27 recommendation of Reclamation and DWR or 20 cfs if accepting the recommendation of
28 CCWD), (2) the water quality at Pumping Plant No. 1 is below 150 mg/L, and (3) the electric
conductivity in Old River, near Holland Tract is at or below 0.7 mS/cm (0.56 mS/cm if accepting
the recommendation of CCDW).

1 attachment 8 to DWR-EXH-13 and the manner in which Reclamation and DWR operate the CVP
2 and SWP.

3 An examination of attachment 8 to DWR-EXH-13 shows that 0.94 and 0.56 electrical
4 conductivity in Old River, near Holland Tract would require greater action by Reclamation and
5 DWR than that which was required prior to the Los Vaqueros project or would be required if
6 there were not seepage or discharges into Rock Slough. Further, even if attachment 8 to DWR-
7 EXH-13 indicates that the 0.94 and 0.56 electrical conductivity would provide greater assurance
8 of the 250 mg/L and 150 mg/L chloride quality at Rock Slough but for the seepage and
9 discharges, that does not justify acceptance of CCWD's proposal because it ignores an important
10 factor of CVP and SWP operations – that Reclamation and DWR do not operate to achieve the
11 objectives, but operate to achieve a quality better than the objective set in the 1995 WQCP. This
12 precautionary action is needed because of the uncertainties in Bay-Delta environment. The
13 uncertainties relate to possible changes in meteorological (i.e., pressure and wind) and water use
14 (i.e., accretions and depletions) conditions. Accordingly, Reclamation and DWR do not, for
15 example, seek to meet a 250 mg/L or 150 mg/L when setting operations, but a level more akin to
16 225 mg/L or 125 mg/L to assure that the objectives are exceeded due to unforeseen
17 circumstances. For those reasons, CCWD's proposal should not be accepted. The 1.0 mS/cm and
18 0.7 mS/cm levels in Old River, near Holland Tract are reasonable.

19 **II. POTENTIAL NEW WATER QUALITY OBJECTIVES**

20 Various parties, including CCWD, the California Urban Water Agencies (CUWA), DWR,
21 and Reclamation have discussed the potential for adopting specific water quality objectives for
22 bromide and total organic carbon. However, only CCWD has suggested if not recommended that
23 the Water Board include a specific water quality objective of 50 µg/l of bromide and 3.0 mg/L of
24 total organic carbon, as measured at Clifton Court Forebay and other Southern Delta drinking
25 water intakes. Such objectives are infeasible with existing facilities. There is no need to include
26 in a revised water quality control plan either bromide and/or total organic carbon objectives or a
27 discussion of the efforts to improve the level of bromide or total organic carbons in Delta waters.

28 As made clear through the oral presentations to the Water Board, it is the CalFED Record

1 of Decision that presented the 50 µg/l of bromide and 3.0 mg/L of total organic carbon, not as
2 possible water quality objectives, but as qualified water quality targets. The CalFED Record of
3 Decision explains:

4 CALFED Agencies' target for providing safe, reliable, and affordable drinking
5 water in a cost-effective way, is to achieve either: (a) average concentrations at
6 Clifton Court Forebay and other southern and central Delta drinking water intakes
7 of 50 ug/L bromide and 3.0 mg/L total organic carbon, or (b) an equivalent level of
8 public health protection using a cost effective combination of alternative source
9 waters, source control and treatment technologies. CALFED Agencies will
10 aggressively pursue a mix of strategies in order to improve in-Delta water quality.
11 Program actions to address the drinking water quality concerns of the more than
12 million Californians who rely on Delta water fall into four broad categories. These
13 actions will:

- 14 • Enable users to capture higher quality Delta water for drinking water
15 purposes.
- 16 • Reduce contaminants and salinity that impair Delta water quality.
- 17 • Evaluate alternative approaches to drinking water treatment to address
18 growing concerns over disinfection byproducts and salinity.
- 19 • Enable voluntary exchanges or purchases of high quality source waters for
20 drinking water uses.

21 None of these actions, by itself, can assure adequate supplies of good quality
22 drinking water for California. They must all be pursued, in conjunction with other
23 CALFED actions such as conveyance and storage improvements, to generate
24 significant improvements in drinking water at the tap.

25 CalFED Record of Decision, pp. 65-66 (emphasis added).³

26 Not surprisingly, these same principles are reflected in the paper that formed the basis for
27 the above-quoted discussion in the CalFED Record of Decision. The preface to that paper, which
28 is entitled "Bay-Delta Water Quality Evaluation - Draft Final Report" and which was prepared by
the CUWA, explains:

29 This report concludes that for currently available advanced water treatment
30 technology (i.e., enhanced coagulation and ozone disinfection) to be able to meet
31 potential long-term drinking water quality standards for water diverted from the
32 Delta, the source water quality should have concentrations less than 3.0 mg/L for
33 TOC and less than 50 µg/L for bromide (<20 mg/L chloride concentration). . . .
34 Source water quality with concentrations higher than 3.0 mg/L TOC and 50 µg/L

35 ³ The Record of Decision can be found at <http://calwater.ca.gov/Archives/GeneralArchive/RecordOfDecision2000.shtml>.

1
2 bromide could still meet a near-term regulatory scenario, but the long-term
3 scenario is more appropriate for planning eventual CALFED Bay-Delta solution.

4 Emphasis added. A copy of the report is attached as exhibit 1.

5 In addition to the qualification that the recommendation is to achieve "potential long-term
6 drinking water quality standards" using then "available advanced water treatment technology",
7 the preface to the report also recognizes:

8 Therefore, CALFED must carefully analyze a variety of actions within its
9 alternatives analysis to determine which combination of actions can assure the
10 achievement of the program's drinking water quality objective in concert with
11 other important objectives. These actions should include at least the following:

- 12 • The capability of in-Delta hydraulic modifications to limit seawater
13 intrusion and resulting increase in bromide concentration
- 14 • Pollutant source control programs for TOC and pathogens (actions should
15 include areas where water is degraded after diversion from the Delta as
16 well as the Bay-Delta watershed itself.)
- 17 • Water storage and storage management
- 18 • Increased outflow
- 19 • An isolated facility

20 * * *

21 . . . This approach to public health protection is one that is balanced by combining
22 (1) source selection to enhance water quality, (2) source protection to preserve
23 water quality, and (3) effective and reliable treatment technology.

24 The reason the CUWA report did not recommend and the CalFED program does not seek
25 to impose a blanket 50 µg/L bromide and 3.0 mg/L total organic carbon obligation is due to the
26 fact that, with existing facilities, it is not possible to achieve such levels of bromide and total
27 organic carbon for water at Clifton Court Forebay or in other areas of the southern Delta. That
28 point is made clear in CBDA-EXH-01 and SWC-EXH-05 and was recognized in the preface to
"Bay-Delta Water Quality Evaluation - Draft Final Report". The preface to the report states:
"[T]hat based upon historic concentrations of these constituents measured at Clifton Court
Forebay in the Delta, it is unlikely that the above criterion for bromide could be met by all urban

1 water agencies using ozonation under existing conditions, even in wet years.”

2 It is for these reasons the CalFED program has been developed upon achieving an
3 equivalent level of public health protection (ELPH), not a specific water quality level of 50 ug/L
4 bromide and 3.0 mg/L total organic carbon. CBDA-EXH-01.

5 The Drinking Water Subcommittee (DWS) of the Bay-Delta Public Advisory
6 Committee is helping to shape the strategy of the program. The DWS developed a
7 framework for drinking water quality management -- “Equivalent Level of Public
8 Health Protection Decision Tree” (ELPH diagram) -- as well as a Conceptual
9 Framework descriptive document in 2002. A focused workshop to identify and
10 prioritize actions for program implementation was held and a process to develop a
11 comprehensive strategic plan for the DWQP started in 2003. The primary tool for
12 strategic planning has been an agency and stakeholder workgroup under the
13 general direction of the DWS. As part of the strategic planning process, the DWS
14 has developed a program goal and program objectives addressing source water
15 quality, water management, treatment, affordability, cost-effectiveness,
16 coordination and communication, and research.

17 Drinking Water Quality Program Multi-Year Program Plan (Years 5 – 8), p. 1, attached as exhibit
18 2. See also CBDA-EXH-01. Both the “CALFED Drinking Water Quality Conceptual
19 Framework”, attached hereto as exhibit 3, and ELPH diagram, attached hereto as exhibit 4, reflect
20 the complex nature of the CalFED program’s efforts to improve drinking water quality. The
21 fixing of objectives that are infeasible should not undermine those efforts.

22 For those reasons, there is no need to incorporate the CalFED targets or a discussion
23 thereof in a revised water quality control plan. The CalFED program should maintain the role of
24 improving water quality, beyond the protections afforded to municipal and industrial uses by the
25 water quality control plan.

26 Dated: February 14, 2005

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BEFORE THE
STATE WATER RESOURCES CONTROL BOARD

PERIODIC REVIEW OF THE 1995
WATER QUALITY CONTROL PLAN
FOR THE SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN
DELTA ESTUARY

Memorandum Supplementing Information And
Providing Final Comments On The Materials
Presented In The Workshop Regarding
Consideration of Potential Amendments or
Revisions of The 1995 Water Quality Control
Plan For The San Francisco Bay/Sacramento-
San Joaquin Delta Estuary

The San Luis & Delta-Mendota Water Authority ("Authority") submits this memorandum pursuant to (1) the revised notice of public workshop ("Revised Notice") issued by the State Water Resources Control Board ("Water Board" or "SWRCB") on September 17, 2004, and (2) the Water Board's April 29, 2005 letter extending the final comment deadline. This memorandum summarizes and supplements the information presented by the Authority at the workshop on the 1995 Water Quality Control Plan ("1995 Plan" or "1995 WQCP") for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Delta" or "Bay-Delta Estuary"), and provides the Authority's comments on the issues addressed by other parties during that workshop.

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10 **I. INTRODUCTION**

11 **A. San Luis & Delta-Mendota Water Authority**

12 The Authority was formed in 1992 as a joint powers authority, and has its principal office
13 in Los Banos, California. The Authority is comprised of 32 water agencies,¹ each of which
14 contracts with the United States for water supplies stored, pumped, and conveyed by the Central
15 Valley Project (“CVP”). The Authority’s member agencies are entitled to approximately
16 2.5 million acre-feet of water for agricultural lands within the western San Joaquin Valley, San
17 Benito and Santa Clara Counties, between 150,000 and 200,000 acre-feet of water for municipal
18 and industrial uses principally within the Silicon Valley, and an additional 250,000 to 300,000
19 acre-feet of water for wildlife refuges for habitat enhancement and restoration activities. In
20 addition, the Authority operates and maintains certain CVP facilities under contract with the
21 United States Bureau of Reclamation (“Reclamation”). Two such facilities are the Tracy

22
23 ¹ The Authority’s member agencies are: Banta-Carbona Irrigation District; Broadview Water
24 District; Central Calif. Irrigation District; Centinella Water District; City of Tracy; Columbia
25 Canal Company; Del Puerto Water District; Eagle Field Water District; Firebaugh Canal Water
26 District; Fresno Slough Water District; Grassland Water District; James Irrigation District;
27 Laguna Water District; Mercy Springs Water District; Oro Loma Water District; Pacheco Water
28 District; Pajaro Valley Water Mgmt. Agency; Panoche Water District; Patterson Water District;
Plain View Water District; Pleasant Valley Water District; Reclamation District 1606; San
Benito County Water District; San Luis Canal Company; San Luis Water District; Santa Clara
Valley Water District; Tranquillity Irrigation District; Turner Island Water District; West Side
Irrigation District; West Stanislaus Irrigation District; Westlands Water District; and Widren
Water District.

1 Pumping Plant, located in the southern portion of the Delta, near the city of Tracy, and the Delta-
2 Mendota Canal, which is used to deliver water from the Tracy Pumping Plant to the Authority's
3 member agencies.

4 **B. Issue Before the State Water Resources Control Board**

5 As adopted by the Water Board in Resolution 2004-0062, the September 30, 2004 staff
6 report entitled "Periodic Review of the 1995 Water Quality Control Plan for the San Francisco
7 Bay/Sacramento San Joaquin Delta Estuary" ("Staff Report"), concisely frames the issue before
8 the Water Board. The Staff Report provides:

9 The [SWRCB] is conducting a periodic review to evaluate new information for
10 consideration of new water quality objectives or changes to the objectives
11 specified in the 1995 Water Quality Control Plan for the San Francisco
12 Bay/Sacramento-San Joaquin Delta Estuary (1995 Bay-Delta Plan or Plan).

12 (Staff Report at p. 8) Presented in other words, the Water Board is conducting the review to
13 determine if new information is available that shows new water quality objectives or changes to
14 the existing objectives in the 1995 WQCP are required to ensure reasonable protection of
15 beneficial uses and to prevent nuisance.

16 **C. New Information For Consideration**

17 There is important new information available to the Water Board; information that may
18 affect the manner in which the Water Board sought to protect beneficial uses in the 1995 Plan.
19 The new information will provide the SWRCB with a better understanding of whether the
20 existing objectives protect beneficial uses of water, meet the demands being made and to be made
21 on the waters of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, and balance
22 between values involved, beneficial and detrimental, economic and social, tangible and
23 intangible.

24 New information reflects that, since 1995, there have been and will continue to be
25 significant investments to study, protection and restoration of the fish and wildlife resources;
26 investments which have resulted in improved overall fishery conditions. It also shows that the
27 Authority's member agencies have, through their use of water exported from the Delta, continued
28 to provide significant value to the State of California and the United States. Against this

1 backdrop, information confirms that since 1995, the demand for water developed in the Bay-Delta
2 Estuary has and is expected to increase and therefore, the competition for that water by all of the
3 beneficial uses has and will likely continue to intensify.

4 As a result, the importance of using water efficiently is ever more important. As
5 presented at the workshop and in written material submitted to the Water Board, the new
6 information can be used to help achieve that goal. The information can be applied in analyses
7 that would (1) provide a better understanding of the level of protection the Delta Cross Channel
8 Gates, outflow, export, and possibly Rio Vista objectives provide to fish populations, and (2)
9 allow for flexibility in the outflow, export and possibly Rio Vista objectives where,
10 "undercompliance," at times, would not significantly affect the protection of fish and wildlife, but
11 would result in potentially significant water savings for subsequent beneficial use. No other
12 changes to the outflow and export objectives is supported by information presented to the Water
13 Board.

14 New information also supports the addition of a compliance point in Old River, near
15 Holland Tract. The current location of a compliance point, at the entrance to the Contra Canal at
16 Pumping Plant No. 1, may be needed to protect municipal and industrial beneficial uses, but that
17 location is at a point where water quality is affected by factors outside of the control of either
18 Reclamation or DWR. The additional compliance point is needed to provide Reclamation and
19 DWR with a point to which they can operate the CVP and SWP, respectively, to achieve the
20 mandated chloride levels.

21 **II. PERIODIC REVIEW**

22 **A. Background**

23 The periodic review of the 1995 Plan commenced on December 10, 2003, when the Water
24 Board issued a notice of public workshop. Based on the comments received at the workshop, the
25 Staff Report recommended that the Water Board hold an additional workshop to receive more
26 information. The Water Board adopted the Staff Report and, in its September 17, 2004 Revised
27 Notice, the Water Board: (1) established a schedule and identified eleven key topics to be
28 addressed at the workshop, (2) indicated that after the workshop Water Board staff would prepare

1 a revised plan or plan amendments, depending on the degree of changes necessary, and conduct
2 appropriate environmental review thereof, and (3) indicated that the Water Board would hold,
3 pursuant to Water Code section 13244, a hearing to consider the proposed revised plan or plan
4 amendments, if any were proposed.

5 **B. Governing Law**

6 1. The Clean Water Act

7 Under the Clean Water Act, the United States Environmental Protection Agency
8 ("USEPA") is responsible for developing water quality criteria and requires states to set water
9 quality standards consistent with those criteria. The water quality criteria placed upon the states
10 by the Clean Water Act extend to waters of the United States, which include:

- 11 i. Waters used in interstate commerce, including all waters subject to the
12 tides;
- 13 ii. Interstate waters;
- 14 iii. Intrastate lakes, rivers, streams, wetlands, etc. which are (a) used by
15 interstate travelers for recreation and other purposes, (b) sources of fish or
16 shellfish sold in interstate commerce, or (c) utilized for industrial purposes
17 by industries engaged in interstate commerce;
- 18 iv. Impoundments and tributaries of waters within these first three categories;
- 19 v. Wetlands adjacent to waters within these categories.

20 (40 C.F.R. § 122.2.)

21 States are required to base the water quality standards on the designated uses of the
22 specific waters involved. These standards must protect the public health or welfare and the
23 quality of water. In establishing the standards, states must consider the potential impact to public
24 water supplies, propagation of fish and wildlife, recreational purposes, industrial and agricultural
25 purposes, and navigation. (33 U.S.C. § 1313(c)(2)(A).) The Water Board is designated as the
26 regulatory agency for all purposes stated in the Clean Water Act. (Water Code § 13160.)

27 2. Porter-Cologne Water Quality Control Act

28 In California, the Porter-Cologne Water Quality Control Act ("Porter-Cologne") is the
primary statute governing water quality and, therein, the legislature grants the Water Board broad
powers to protect water quality within California's boundaries. (Water Code § 13000 *et seq.*)

1 Under Porter-Cologne, the Water Board has authority to regulate activities that may affect the
2 quality of waters to attain the highest water quality which is reasonable, considering all the
3 demands made on the waters and the total values involved, i.e., beneficial and detrimental,
4 economic and social, tangible and intangible. (Water Code § 13000.) The Water Board's
5 authority under Porter-Cologne extends to all waters within the California's boundaries, thereby
6 overlapping the Water Board's authority over those waters of the United States, granted under the
7 Clean Water Act.

8 Under Porter-Cologne, the Water Board is authorized to adopt water quality control plans.
9 (Water Code § 13170.) Such a plan:

10 [C]onsists of a designation or establishment for the waters within a specified area
11 of all of the following:

- 12 (1) Beneficial uses to be protected.
- 13 (2) Water quality objectives.
- 14 (3) A program of implementation needed for achieving water quality
15 objectives.

16 (Water Code § 13050(j).)

17 "Water quality objectives" are the limits or levels of water quality constituents or
18 characteristics which are established for the reasonable protection of beneficial
19 uses of water or the prevention of nuisance within a specific area.

20 (*Id.* at § 13050(h).) For each water quality objective set by the Water Board, the Water Board
21 must find that the water quality objective:

22 [W]ill ensure the reasonable protection of beneficial uses and the prevention of
23 nuisance; however, it is recognized that it may be possible for the quality of water
24 to be changed to some degree without unreasonably affecting beneficial uses.

25 (Water Code § 13241.)

26 Factors to be considered by [the Water Board] in establishing water quality
27 objectives shall include, but not necessarily be limited to, all of the following:

- 28 (a) Past, present, and probable future beneficial uses of water.
- (b) Environmental characteristics of the hydrographic unit under consideration,
including the quality of water available thereto.
- (c) Water quality conditions that could reasonably be achieved through the
coordinated control of all factors which affect water quality in the area.

- 1 (d) Economic considerations.
- 2 (e) The need for developing housing within the region.
- 3 (f) The need to develop and use recycled water.

4 (*Id.*)

5 Objectives adopted by the Water Board, if they are also water quality standards within the
6 meaning of the Clean Water Act, must be made available to the administrator of the USEPA, for
7 review for compliance with the Clean Water Act. (33 U.S.C. § 1313(c).) If the administrator of
8 the USEPA determines that the standards do not comply with the Clean Water Act, the
9 administrator shall specify changes necessary to comply with the Clean Water Act. If the
10 changes are not made, the administrator of the USEPA may prepare applicable water quality
11 standards. (*Id.*) The Water Board developed the 1995 WQCP in accordance with the Clean
12 Water Act and Porter-Cologne.

13 3. Changing An Existing WQCP

14 A significant concern with any change in existing standards, under the Clean Water Act,
15 or objectives, under Porter-Cologne, is the potential degradation in the level of protection. There
16 are federal and state policies that guide such actions.

17 a. Federal Policy on Water Quality Degradation

18 Under federal law, each state must adopt and implement an "antidegradation policy." (33
19 U.S.C. § 1251(a), 40 C.F.R. § 131.12.) The governing regulations specify the minimum
20 requirements of each state's antidegradation policy:

21 (1) Existing instream water uses and the level of water quality necessary to
22 protect the existing uses shall be maintained and protected.

23 (2) Where the quality of the waters exceed levels necessary to support
24 propagation of fish, shellfish, and wildlife and recreation in and on the water, that
25 quality shall be maintained and protected unless the State finds, after full
26 satisfaction of the inter-governmental coordination and public participation
27 provisions of the State's continuing planning process, that allowing lower water
28 quality is necessary to accommodate important economic or social development in
the area in which the waters are located. In allowing such degradation or lower
water quality, the State shall assure water quality adequate to protect existing uses
fully. Further, the State shall assure that there shall be achieved the highest
statutory and regulatory requirements for all new and existing point sources and all
cost-effective and reasonable best management practices for non point source
control.

1 (3) Where high quality waters constitute an outstanding National resource,
2 such as waters of National and State parks and wildlife refuges and waters of
3 exceptional recreational or ecological significance, that water quality shall be
4 maintained and protected.

5 (4) In those cases where potential water quality impairment associated with a
6 thermal discharge is involved, the anti-degradation policy and implementing
7 method shall be consistent with section 316 of the [Clean Water] Act.

8 (40 C.F.R. § 131.12(a).)

9 Thus, the federal antidegradation policy allows an action that would degrade surface water
10 quality in those waters that have sufficient quality to support propagation of fish, shellfish, and
11 wildlife and recreation in and on the water. However, in those areas, a state may allow an action
12 that degrades or lowers water quality, provided: (1) "the State shall assure water quality adequate
13 to protect existing uses fully," (2) "the State shall assure that there shall be achieved the highest
14 statutory and regulatory requirements for all new and existing point sources and cost effective and
15 reasonable best management practices for non-point source control," and (3) the State find, "after
16 full satisfaction of the intergovernmental coordination and public participation provisions of the
17 State's continuing planning process, that allowing lower water quality is necessary to
18 accommodate important economic or social development in the area in which the waters are
19 located." (40 C.F.R. § 131.12(a)(2).)

20 b. California Policy on Water Quality Degradation

21 California's water quality maintenance policy predates the federal "anti-degradation"
22 policy described above and established in Section 131.21 of Title 40 to the Code of Federal
23 Regulations. In Water Quality Resolution 68-16, issued on October 24, 1968 and entitled
24 "Statement of Policy with Respect to Maintaining High Quality of Waters in California," the
25 Water Board resolved:

26 Whenever the existing quality of water is better than the quality established in
27 policies as of the date on which such policies become effective, such existing high
28 quality will be maintained until it has been demonstrated to the State that any
change will be consistent with maximum benefit to the people of the State, will not
unreasonably affect present and anticipated beneficial use of such water and will
not result in water quality less than that prescribed in the policies.

(SWRCB WQ Res: 68-16 at p. 1.)

1 Resolution 68-16 has been adopted as part of California's policy for water quality control,
2 and as a general objective in all water quality control plans adopted by the regional boards.
3 (SWRCB Order No. WQ 86-17 (Nov. 10, 1986), 1986 WL 22526 at *8.) In its Order No. WQ
4 86-17, the Water Board recognized:

5 Before approving any reduction in water quality, or any activity that would result
6 in a reduction in water quality, the [State Water Board and any] Regional Board
7 must first determine that the change in water quality would not be in violation of
8 State Board Resolution No. 68-16 or the federal antidegradation policy.

8 (*Id.*)

9 The Water Board has interpreted Resolution 68-16 to incorporate the federal
10 antidegradation policy in situations where the federal policy is applicable. (SWRCB Order No.
11 WQ 86-17, 1986 WL 22526 at *9.) However, "where the federal antidegradation policy does not
12 apply, the State and Regional Boards have applied the general test set forth in State Board
13 Resolution No. 68-16, without addressing the specific... test established by the federal
14 antidegradation policy." (*Id.*) Finally, "[t]he federal antidegradation policy is part of the
15 [USEPA's] water quality standards regulations, and has been incorporated into the state's water
16 quality protection requirements." (*Id.* at *10.)

17 The Water Board has provided little guidance on the application of either Resolution 68-
18 16 or the federal antidegradation policy. In October, 1987, William Attwater, then Chief Counsel
19 to the State Board, prepared the most significant document on the issue - a memorandum
20 discussing the application of the federal policy to actions by the State and Regional Boards.
21 ("Attwater Memorandum" a copy of which is attached hereto.) Citing State Board Order No. WQ
22 86-17, the Attwater Memorandum notes that Resolution 68-16 incorporates the federal
23 antidegradation policy. (Attwater Memorandum at 2.) The Memorandum notes further:

24 The federal antidegradation policy serves as a "catchall" water quality standard, to
25 be applied where other water quality standards are not specific enough for a
26 particular water body or portion of that water body, or where other water quality
27 standards do not address a particular pollutant. The test also serves to provide
28 guidance for standard setting and for other regulatory decisions, to determine when
additional control measures should be required to maintain instream beneficial
uses or to maintain high quality waters.

(*Id.*) Citing a guidance document from USEPA, Region 9, the Attwater Memorandum

1 acknowledges that although the policy is ordinarily triggered by regulation of pollutant-
2 discharging activities under the Clean Water Act,

3 [t]he federal antidegradation policy will also apply to changes in water quality
4 resulting from water diversions. [US]EPA guidance suggests that in the case of an
5 irreconcilable conflict between a State's water quantity allocations and the federal
6 antidegradation policy, the State's water rights law would prevail.

6 (*Id.* at 6.)

7 In fact, "State water rights law would prevail if achieving the requirements of the federal
8 antidegradation policy would require a waste or unreasonable use of water." (*Id.*)

9 The Attwater Memorandum thus recognizes:

10 The federal antidegradation policy emphasizes protection of instream beneficial
11 uses, especially protection of aquatic organisms. In most cases, where instream
12 beneficial uses will not be impaired and no outstanding National resources waters
13 will be affected, the federal antidegradation policy is not an absolute bar to
14 reductions in water quality. Rather, the policy requires that reductions in water
15 quality be justified as necessary to accommodate important social and economic
16 development. The outcome will often depend upon a balancing of competing
17 interests, the decision resting in the sound judgment of the State and Regional
18 Boards.

15 (*Id.* at 2-3.)

16 **III. SUPPLEMENTAL INFORMATION AND COMMENTS²**

17 **A. Changes That Have Affected And Continue To Affect The Bay-Delta Estuary** 18 **Since the Water Board Adopted the 1995 WQCP**

19 There have been significant changes in the Bay-Delta Estuary since 1995. Those changes
20 are physical and regulatory and reflect significant investments in the protection and restoration of
21 fish and wildlife. During the time those changes were being made, the Authority's member
22 agencies have through their use of water exported from the Delta continued to provide significant
23 value to the State of California and the United States. During the time those changes were being
24 made, there was also an increase in the demand for water; a demand which is expected to
25 continue to increase. All of the changes underscore the importance of using water, whatever the
26 beneficial use, efficiently.

27 ² In addition to the information presented below, the Authority incorporates by reference herein
28 the information it previously provided to the Water Board as part of the workshop.

1 1. Changed Physical Environment

2 Since 1995, through significant investments by federal, state and/or local agencies, the
3 physical environment within the Delta has changed. The greatest impacts to the physical
4 environment likely result from implementation of the CVPIA and the CALFED Program, impacts
5 intended in large part to provide improved conditions for fish and wildlife.

6 a. The Central Valley Project Improvement Act

7 The CVPIA mandates changes in management of the CVP, particularly for the protection,
8 restoration, and enhancement of fish and wildlife. The purposes of the CVPIA are:

9 (a) to protect, restore, and enhance fish, wildlife, and associated habitats in the
10 Central Valley and Trinity River basins of California;

11 (b) to address impacts of the Central Valley Project on fish, wildlife, and
associated habitats;

12 (c) to improve the operational flexibility of the Central Valley Project;

13 (d) to increase water-related benefits provided by the Central Valley Project to the
14 State of California through expanded use of voluntary water transfers and
improved water conservation;

15 (e) to contribute to the State of California's interim and long-term efforts to protect
16 the San Francisco Bay/Sacramento-San Joaquin Delta Estuary; and

17 (f) to achieve a reasonable balance among competing demands for use of Central
18 Valley Project water, including the requirements of fish and wildlife, agricultural,
municipal and industrial, and power contractors.

19 (CVPIA, § 3402.) According to United States Department of the Interior ("Interior,") the CVPIA
20 is responsible for the following activities:

21 Central Valley

- 22 • Up to 800,000 acre-feet of CVP water has been applied each year [in part
23 through CVP export pumping curtailments] to improve streamflows for salmon,
steelhead, and other fish on the Sacramento, American, and Stanislaus rivers and
on Clear Creek.

24 (See SLDM-EXH-03B at p. 17.)³

25 Sacramento Valley

- 26 • The removal of 5 dams and 15 diversions improved access to more than 24

27 ³ A copy of the report can be found at [http://www.usbr.gov/mp/cvpia/accomplishments/](http://www.usbr.gov/mp/cvpia/accomplishments/index.html)
28 [index.html](http://www.usbr.gov/mp/cvpia/accomplishments/index.html).

1 miles of upstream spawning areas for and enhancing survival of juvenile out-
2 migrants.

3 • More than 8,000 acres of riparian habitat has been acquired and more than
4 500 acres restored or enhanced along 30 miles of basin streams to provide cover
5 and shade.

6 • More than 108,000 acre-feet of water have been acquired through purchase
7 or exchange to improve fish habitat and passage, streamflows, and water
8 temperatures.

9 • Approximately 156,000 tons of gravel have been added to streams to
10 improve spawning success.

11 • More than 172 acres of riparian habitat has been acquired and more than
12 500 acres restored or enhanced along 8.7 miles of basin streams to provide cover
13 and shade.

14 • Nineteen diversions with a total capacity of more than 6,700 cubic feet per
15 second have been screened or otherwise modified to reduce entrainment of juvenile
16 fishes. Approximately 70-75 percent of all water diverted from the mainstem
17 Sacramento River is now taken in a fish-friendly manner.

18 • A temperature control device has been installed at Shasta Dam to provide
19 water of suitable temperature for anadromous fish spawning and rearing.

20 • The Coleman National Fish Hatchery is being rehabilitated.

21 • Raceways have been improved and a new water treatment system installed
22 to protect hatchery production.

23 • A new hatchery, the Livingston Stone National Fish Hatchery, has been
24 constructed on the mainstem Sacramento River to assist in the management and
25 recovery of winter-run chinook salmon, a listed endangered species.

26 • The Keswick Fish Trap has been modified and improved.

27 • More than 5,650 acres of upland and riparian habitat have been acquired
28 with contributions from the CVPIA to benefit other species of wildlife affected by
the CVP. More than 650 acres have been enhanced or restored, including habitat
for species listed under the Endangered Species Act.

(See SLDM-EXH-03B at p. 17.)⁴

Delta

• Modification of the Delta Cross Channel Gates operation.

• Six diversions have been screened to protect juvenile fish.

• A barrier at the head of Old River has been seasonally installed to guide

⁴ A copy of the report can be found at <http://www.usbr.gov/mp/cvpia/accomplishments/index.html>.

1 juvenile salmon and reduce the influence of the State and Federal pumping
2 facilities during their spring time out-migration.

- 3 • CVPIA funds were used to acquire 1,200 acres of land in the Delta for
4 protection and restoration of native habitats and populations of native species.

(See SLDM-EXH-03B at p. 18.)⁵

5 San Joaquin Valley

- 6 • More than 5.4 miles of stream channel has been enhanced as instream
7 habitat for anadromous fish.

- 8 • More than 844,000 acre-feet of water have been acquired for restoration of
9 fish friendly instream flows.

- 10 • Nearly 72,000 tons of gravel have been placed in San Joaquin River Basin
11 streams to increase spawning habitat availability for native fishes.

- 12 • A barrier to fish migration on the Cosumnes River has been removed.

- 13 • CVPIA funds have contributed to the acquisition of more than 82,200 acres
14 of habitat, including nearly 2,400 acres of riparian habitat, to benefit native species
15 in the valley. Restoration and enhancement measures have been applied to an
16 additional 456 acres.

- 17 • Nearly 8,800 acres of drainage-impaired lands have been acquired and
18 retired from irrigated agriculture, resulting in a reduction in the amounts of
19 agricultural drainage entering the San Joaquin River system. More than 2,200
20 acres of these lands have been treated to reduce the threat of contamination and to
21 provide increased habitat for native wildlife species.

(See SLDM-EXH-03B at p. 18.)⁶

22 b. CALFED Program

23 The CALFED Program is intended to restore ecological health and improve water
24 management for beneficial uses of the Bay-Delta Estuary. The CALFED Program underwent
25 programmatic review, and on August 28, 2000, a record of decision was issued. That decision
26 describes a plan for implementation. Components of the plan include: Governance, Ecosystem
27 Restoration, Watersheds, Water Supply Reliability, Storage, Conveyance, Environmental Water
28 Account, Water Use Efficiency (conservation and recycling), Water Quality, Water Transfers,

⁵ A copy of the report can be found at <http://www.usbr.gov/mp/cvpia/accomplishments/index.html>.

⁶ A copy of the report can be found at <http://www.usbr.gov/mp/cvpia/accomplishments/index.html>.

1 Levees, and Science. In the first four years of implementation, approximately \$2.9 billion have
2 been invested, *see* Introduction, Statement of Progress & Accomplishments,⁷ in actions that
3 include more 300 ecosystem restoration projects. These projects are of the following types:

- 4 ● Restoration of Multiple Habitats;
- 5 ● Shallow-Water Tidal and Marsh Habitat;
- 6 ● Floodplains and Bypasses;
- 7 ● Riparian Habitat;
- 8 ● Channel Dynamics and Sediment Transport;
- 9 ● Uplands and Wildlife-Friendly Agriculture;
- 10 ● Fish Screens and Passage;
- 11 ● Fishery Assessments;
- 12 ● Ecosystem Water and Sediment Quality;
- 13 ● Environmental Water Management;
- 14 ● Natural Flow Regimes;
- 15 ● Nonnative Invasive Species;
- 16 ● Special-Status Species;
- 17 ● Local Watershed Stewardship; and
- 18 ● Environmental Education

19 (See, e.g., Program Objectives & Accomplishments, Ecosystem Restoration & Watershed
20 Management.)⁸

21 2. Changed Regulatory Environment

22 The regulations effecting the Bay-Delta Estuary have also changed since 1995, again,
23 actions that were intended to provide improved conditions for fish and wildlife. The following
24 provides examples of some of the changes:

- 25 ● Under federal ESA authority, the Delta Cross Channel Gates have been
26 used, since 1999, to protect spring-run Chinook.
- 27 ● Under federal ESA authority, emphasis has been placed, since 1999, on
28 temperature conditions in streams with steelhead habitat, including the American,
Feather, and Stanislaus Rivers.
- Under CVPIA Authority, refined implementation of section 3406(b)(2),
which results in the dedication of up to 800,000 acre-feet of water each year.
- Under CVPIA authority, Trinity River annual flows have been increased to
the current range of 368,600 to 815,000 acre-feet, [based on year type.] As a
result, less Trinity water supply will be available for export to the Sacramento
River to assist in meeting in-basin uses and exports.
- Under CALFED authority, an environmental water account program has

⁷ A copy of the report can be found at calwater.ca.gov/AboutCalfed/AnnualReport2004.shtml.

⁸ A copy of the report can be found at calwater.ca.gov/AboutCalfed/AnnualReport2004.shtml.

1 been used to acquire water thus allowing the EWA Agencies to prescribe actions
2 modifying operations of CVP and/or SWP facilities to enhance fish protection and
3 foster recovery of Delta-dependent species beyond the actions set forth in a
4 "regulatory baseline," which includes the objectives established in the 1995
5 WQCP.

6 (See, e.g., DOI-EXH-10 at pp. 2-5 to 2-8.)⁹

7 **B. Value of the Authority Service Area**

8 Since the adoption of the 1995 WQCP, and during these times of improved conditions for
9 fish and wildlife, the Authority's member agencies have continued to provide extensive value to
10 the State of California and the United States through, in part, their use of water exported from the
11 Delta. They have provided benefits despite the fact that implementation of the 1995 WQCP and
12 regulatory constraint have disproportionately reduced the available water supply to the
13 Authority's member agencies.¹⁰

14 The service area for the Authority's member agencies includes two distinct economies,
15 and each is affected by changes to the CVP water supply differently. The South Bay and Central
16 Coast portion includes the most southern part of the San Francisco Bay urban area, and some less
17 urban areas in San Benito and Santa Clara Counties. Most CVP water use in this region is for
18 municipal and industrial ("M&I") purposes and the CVP water supply is a small but important
19 share of all water use in the region. The west San Joaquin Valley portion is highly agricultural.
20 There are no large cities or industries in the region to provide an alternative economic base. Most
21 water use is for agriculture, although smaller amounts of water are used for M&I purposes and
22 wildlife refuges and the CVP provides a large share of all water use in the region. Depending on
23 water supply conditions, about 800,000 acres are partially or solely irrigated with CVP water.

24 According to the studies, in the service area of the Authority's member agencies, CVP
25 M&I contract supplies are associated with about \$16.5 billion of personal income, involving
26 around 481,000 persons living in the service area, about 324,000 full-time and part-time jobs.

27 ⁹ A copy of the CVP-OCAP can be found at www.usbr.gov/mp/cvo/ocap_page.html.

28 ¹⁰ Regulation of the CVP reallocated approximately 1.2 million acre-feet from Authority member
agencies water supply for agriculture and municipal and industrial uses to the environment:
800,000 acre-feet pursuant to section 3406(b)(2) of the CVPIA and approximately 400,000 acre-
feet for wildlife refuges.

1 CVP agricultural contract supplies are associated with about \$2.69 billion in total on-farm and
2 indirect economic value. Of that amount, total annual on-farm and indirect wages and salaries
3 total approximately \$525 million, and involve around 37,465 persons employed through on-farm
4 and indirect employment. Although the M&I water supplies appear to be associated with much
5 more income and employment than the agricultural water supplies, the dependency of economic
6 activity on CVP M&I water is not as strong as the dependency of agricultural economic activity
7 on CVP agricultural supplies. For example, in 1999, approximately 70 percent of the agricultural
8 supply in the Authority's service area came from CVP contracts. When CVP supplies are short,
9 CVP M&I users are willing and able to pay for substitute supplies. The willingness and ability of
10 agricultural users to pay for substitute supplies, which consist primarily of groundwater or water
11 purchased through short-term transfers, is substantially less. Therefore, in periods of shortage,
12 more of the associated agricultural economic activity will actually be lost than would be for the
13 M&I activity.¹¹

14 C. Increased Human Population Levels

15 The demand for water, including water developed within the San Francisco
16 Bay/Sacramento-San Joaquin Delta Estuary, has increased and is expected to continue to increase
17 significantly due to increased population levels. The United States Census Bureau reported
18 California's population in 1990 at 29,760,021,¹² and estimated California's population to be
19 31,589,000 in 1995 and to have increased to 34,441,000 by the end of this year.¹³ The United
20

21 ¹¹ A more detailed analysis of economic activity associated with west-side water supply is
22 attached hereto as Exhibit 1. Exhibit 1 is a copy of the October 2003 draft West Side Integrated
23 Resources Management Plan. Although that document is in draft form, as is the information
24 presented in this section, the document is attached and the section is included because they
25 provide information of the types and levels of contribution made by the Authority's member
agencies. More recent data, not yet available for presentation, indicates that the value provided
by the Authority member agencies is equal to or greater than that presented herein. Indeed, more
recent data, albeit limited to farm gate value of crops, is attached hereto as Exhibit 2. Those data
are representative. They do not include information from all of the Authority's member agencies
and excludes information on cattle, sheep, aviary, dairy and specialty crops.

26 ¹² See www.census.gov/prod/cen1990/cp1/cp-1.html (providing 1990 Census of Population
27 General Population Characteristics (CP-1) -- California (CP-1-6), Section 3, Table 1).

28 ¹³ See www.census.gov/population/projections/state/stpjpop.txt (providing projections of the total
population of states, 1995 to 2025).

1 States Census Bureau projects California's population to reach more than 41,000,000 within the
2 next ten years.¹⁴

3 **D. Delta Cross Channel Gates Closure, Delta Outflow and Exports**

4 1. Summary of Issues

5 The Revised Notice presented the issues as follows:

6 Is new information available regarding the effects of operation of the Delta cross
7 channel gates?

8 Should the SWRCB amend the Delta cross channel gates closure objective in the
9 water quality objectives for fish and wildlife beneficial uses (Table 3 of the 1995
10 Plan)? How should the objective be modified and what are the scientific and legal
11 arguments in support of and against such modifications?

12 Should the SWRCB amend the Delta Outflow Objective in the Water Quality
13 Objectives for Fish and Wildlife Beneficial Uses (Table 3 of the 1995 Plan) by
14 adding flexibility to the value of the objective or by modifying footnote 14 to
15 allow alternative methods to meet the objective? How should the value or footnote
16 14 be modified and what are the scientific and legal arguments in support of and
17 against such modifications?

18 Should the SWRCB amend the export limits objective in the water quality
19 objectives for fish and wildlife beneficial uses (Table 3 of the 1995 Plan)? How
20 should the objectives be modified and what are the scientific and legal arguments
21 in support of and against modification?

22 Should the SWRCB modify: (1) footnote 23 to increase the flexibility in selecting
23 the accounting standard to follow when determining export/import ratio, (2) the
24 manner in which in-Delta releases are accounted for by the export/import
25 accounting standard, and (3) the export limits contained in footnote 22? How
26 should the footnotes or accounting procedures be modified and what are the
27 scientific and legal arguments in support of and against such modification?

28 2. New Science Shows That At Times, Meeting the Delta Cross Channel Gate
Closure, Delta Outflow and/or Export, and Possible Rio Vista Objectives Is
Not Necessary to Provide The Level Of Protection The Objectives Were
Developed To Provide

As noted above, in the ten years since the Water Board adopted the 1995 WQCP, Federal,
State and local interests have invested millions of dollars and thousands of hours studying the
Delta and in particular the impacts of changes in Cross-Channel Gate operations, outflow, and
exports on fish and wildlife. Those investments generated significant amounts of data; data that
show at times the objectives do not provide the level of protection they were thought in 1995, and

¹⁴ See www.census.gov/population/projections/state/stpjpop.txt (providing projections of the total population of states, 1995 to 2025).

1 that to provide there could be a level of under-compliance for the outflow, export and possibly
2 Rio Vista objectives without significant impact to the level of protection for fish and wildlife but
3 with a significant savings of water that would be available for beneficial uses.

4 a. New Understanding of Outflow (X2)

5 In 1995, X2 was thought of as a "habitat indicator." The principal, if not sole, basis for that
6 thought were relationships between X2 and phytoplankton, neomysis, crangon shrimp, molluscs,
7 striped bass (survival), starry flounder, longfin smelt and striped bass (abundance - commonly
8 referred to as the X2 species). It was thought that (1) "the ability of X2 to act as a surrogate for
9 the effects of net Delta outflow and the hydrodynamic variables" was refuted in the statistical
10 significance of the relationships between X2 and the organisms listed previously and (2) the wide
11 variety of trophic levels involved. (See Managing Freshwater Discharge to the San Francisco
12 Bay-Delta Estuary: The Scientific Basis for an Estuarine Standard, a copy of which is attached as
13 Exhibit 3, at B-6.) Since 1995, new information has caused a change in the scientific
14 community's thoughts. The principal changes are the following:

- 15 • The abundance-X2 relationships have been updated to reflect the influence
16 of the invasive Asian clam.
- 17 • Two additional species have been found to have abundance-X2
18 relationships, splittail and American shad.
- 19 • Analyses of these relationships have been carried out to assess how
20 sensitive changes in abundance are to changes in Delta outflow, analyses that
21 reveal that when outflows are relatively high, very large changes in outflow (100s
22 KAF) are associated with very small changes (less than 5%) in abundance.
- 23 • There is now a general recognition that the abundance-X2 relationships for
24 two of the adult species, American Shad and Splittail, are actually relationships
25 between abundance and inflow and are probably related to the area of flooded
26 vegetation. This distinction is important because exports affect outflow and X2,
27 but not inflow, at least not directly. For the remaining relationships between
28 species abundance and X2, only three pertain to adult species, none of which are
listed species. The others apply to lower life stages. For those, there is no
relationship between abundance of these lower life stages (or larval survival in the
case of striped bass) and adult abundance.

26 b. The View of Other Stakeholders Regarding X2

27 TBI argues that the scientific basis for the February - June Delta outflow objective is
28 strong and statistically significant, and that any further reductions in outflow would adversely

1 impact estuarine habitat and aquatic organisms. (BAY - EXH - 04. *See also* BAY - EXH - 05.)
2 The Authority does not dispute that the scientific basis for the February - June Delta outflow
3 objective continues to be strong and statistically significant. The objection by the Authority to
4 TBI's position is that it is misleading and fails to appreciate the limited water resource of the
5 State of California.

6 TBI's position is misleading because it ignores the changes in understanding outlined
7 above, and fails to appreciate that the aquatic organisms that are protected by outflow are either
8 for adult species, none of which is listed as threatened or endangered (longfin smelt, crangon
9 shrimp, and starry flounder), or are for earlier life stages, none of which are correlated with
10 abundance of the corresponding adults (i.e., larval survival of striped bass). TBI also fails to
11 appreciate the limited nature of water resources of California, because it opposes flexibility of the
12 outflow objective. Flexibility during the February-June period would allow for a relatively minor
13 change in outflow, when the impacts of a change to the aquatic organisms protected by outflow
14 would be relatively small, while the potential benefit from the use of the "saved" water would be
15 great.¹⁵

16 As to the general estuarine habitat and aquatic organism argument, if changes in outflow
17 caused impacts to the general ecosystem, those impacts should be manifested as changes in
18 abundance of species near the top of the food chain, namely, the X2 species. Therefore, the
19 abundance-X2 relationships are evidence (the only evidence) that changes in outflow "impact
20 estuarine habitat and aquatic organisms." However, these relationships also indicate that at
21 higher outflows, these "impacts" are small and are associated with a large water cost.

22 The California Department of Fish & Game ("DFG") make an argument similar to TBI's,
23 stating that the outflow objective continues to serve to ensure the broad ecological benefits
24 associated with robust outflow levels. (DFG - EXH - 03. *See also* DFG - EXH - 04.) Again, the

25
26 ¹⁵ For example, as explained in more detail below, when Delta outflow is at 29,000 cfs, the
27 amount of water that places X2 at Roe Island, a reduction in outflow that would cause a 4.5%
28 reduction in longfin smelt abundance would allow 360,000 acre-feet of water to remain in
storage. The reduction in abundance would be less for other adult species with an abundance-X2
relationship.

1 Authority does not dispute that at times, the outflow objective benefit the ecosystem where the
2 Authority takes issue is with DFG's blanket, unsupported statement of general benefits. Indeed,
3 one might assert that "broad ecological benefits" occur, but without evidence, one might equally
4 assert that "broad ecological benefits" do not occur. The adult abundance-X2 relationships for
5 three unlisted species are the only evidence of "broad ecological benefits." Again, these
6 relationships indicate that at higher outflows, these "broad ecological benefits" are small and are
7 associated with a lot of water. DFG is therefore arguing to spend a lot to gain only a little.

8 Finally, the USEPA states that the existing outflow objective has been reinforced by data
9 gathered since the 1995 WQCP was adopted. (EPA - EXH - 02. See also EPA - EXH - 03.) The
10 Authority recognizes that the objective has been "reinforced," in the sense that the relationships
11 are still statistically significant after considering recent data. However, as noted above, there is
12 general acceptance that two of the five adult abundance-X2 relationships are actually not
13 relationships with X2 but, rather, with Delta inflow, and that all but three of the abundance-X2
14 relationships are actually with abundance or survival of early life stages of species whose adult
15 abundance is not correlated with abundance or survival of early life stages and, therefore, not with
16 outflow either.

17 c. New Understanding of Exports

18 Considerable new information is now available on the effects of exports on the abundance
19 of important fish species, in particular on salmon and delta smelt. This information falls into two
20 categories:

- 21 • Information showing that effects on abundance are small or nonexistent
22 (in the statistical sense—i.e., showing no statistically significant relationship
between exports and abundance)
- 23 • Information providing a plausible explanation for why effects on
24 abundance are small or nonexistent.

25 (1) Information Regarding The Small or Non-Existent Effects
of CVP and SWP Exports On Abundance Of Salmon

26 Over the years, hundreds of experiments have been carried out to see what happens to
27 small salmon as they move through the Delta. Generally, those experiments involved thousands
28 of salmon, which were grown in hatcheries, and in which small coded wires were inserted in each

1 of them. In each experiment, groups of these "coded wire tagged" salmon were released just
2 upstream of or in the Delta. Some of these fish were salvaged at the CVP and SWP export
3 pumping plants in the Delta,¹⁶ and trucked downstream and released back into the Delta. Others
4 were captured in nets just downstream of the Delta. The experiments allow for the development
5 of relationships between the number of salvaged fish to (1) the number of fish that were at the
6 CVP and SWP export pumping plants, and (2) the number of fish that died at or were "exported"
7 by the CVP and SWP.

8 Specifically, based on data developed for each group of coded wire tagged salmon, an
9 estimate can be made of the number of that group that died at the CVP and SWP export pumps.
10 This is referred to as "direct mortality," that is, the mortality directly attributed to CVP and SWP
11 export pumping. Because the number of released fish for each group is known, the percentage
12 dying at the CVP and SWP pumps can be estimated. This analysis demonstrates that although
13 direct mortality at the CVP and SWP pumps may appear large in absolute numbers of fish, when
14 all the data from coded wire tagged experiments over the years are considered, direct mortality is
15 typically less than 1% of the total population. (See Exhibit 4 attached hereto.) In other words, the
16 data show that, on a population level basis, direct mortality is typically very small. That is the
17 case for both Sacramento River salmon and San Joaquin River salmon when there is a barrier at
18 the head of Old River.¹⁷

19 Another kind of mortality has also been attributed to CVP and SWP export pumping. It is
20 called "indirect mortality." This is the mortality that occurs outside of the CVP and SWP export
21 facilities, but is nonetheless attributed to CVP and SWP exports or other water project operations
22 in the Delta. Indirect mortality can be estimated from the same coded wire tagged experiments
23 mentioned above. Most of these experiments also involve the fish caught in nets just downstream
24 of the Delta, to see how many fish survived passage through the Delta and how many did not.

25
26 ¹⁶ Salvaged fish are ones that were diverted by screens into holding (salvage) tanks.

27 ¹⁷ There are cases when direct mortality is not insignificantly small. Those cases are rare and
28 unpredictable, and exports should be managed to prevent them when they occur. Tools currently
exist outside of the 1995 WQCP are available to address those circumstances.

1 Each such experiment is actually measuring the combined effect of direct and indirect mortality,
2 along with mortality caused by all other factors, such as predation and toxic contamination. Also,
3 each experiment was done under different conditions of exports, river flow, water temperature,
4 etc. So, it should be possible to analyze results from many of these experiments and see which
5 factors (especially CVP and SWP exports) were affecting salmon survival through the Delta. In
6 fact, that analysis has been done.

7 Pat Brandes of USFWS organized a number of the experiments mentioned above into 81
8 pairs of releases, each pair consisting of an upstream and a downstream release,¹⁸ and each
9 release consisting of 40,000 to 120,000 hatchery-grown, coded wire tagged smolts. Use of pairs
10 allows for normalizing of results with respect to several confounding factors such as tides, gear,
11 etc.

12 Professor Ken Newman, University of Idaho, analyzed these pairs of releases to see if he
13 could identify the factors affecting survival through the Delta. *See Modeling Paired Release-*
14 *Recovery Data in the Presence of Survival and Capture Heterogeneity with Application to*
15 *Marked Juvenile Salmon, January 16, 2003, Ken B. Newman, attached as Exhibit 5.) Newman*
16 *found that water temperature had a strong effect, and concluded that the effect of exports was*
17 *questionable. The Authority sent Newman's analysis to Dr. Bryan Manly, one of the world's*
18 *preeminent ecological statisticians. Dr. Manly confirmed that CVP and SWP export effects were*
19 *questionable. Specifically, Manly said: "... I suggest that a reasonable point of view at this point*
20 *is that the estimates of [Delta Cross Channel Gate] and [CVP and SWP] export effects available*
21 *so far are questionable, and the data need more study." Incidentally, when the Authority sent*
22 *Brandes' data, presented to the Water Board in this periodic review on Cross Channel Gate*
23 *closure effects on survival, to Manly, Manly also concluded that those effects were questionable.*
24 *(See, e.g., Review of Papers Pertaining to Salmon Survival in Relationship to the Closing of the*
25 *Delta Cross Channel Gates and Export Pumping, attached as Exhibit 6.)*

26 Biologist Steve Cramer, working on the winter run population model for California Urban

27 ¹⁸ Some of the downstream releases were paired with more than one upstream release, so there
28 were less than 162 releases.

1 Water Agencies ("CUWA") in cooperation with the fish agencies and others, used Newman's
2 analysis to estimate effects.¹⁹ The CUWA winter run model uses Newman's analysis, despite its
3 questionable nature, because it is the only model available to account for Delta effects.
4 Nevertheless, preliminary results from the winter run model showed that Delta factors (including
5 CVP and SWP exports) had a very small effect on adult populations (about 1%). Dr. Wim
6 Kimmerer, the CALFED Environmental Water Account Science Advisor, presented an
7 independent analysis of factors affecting winter run populations to the Water Board in this
8 periodic review earlier this year. His analysis is consistent with the results from the CUWA
9 model.

10 In summary, when it concerns CVP and SWP exports, despite years of data and
11 experiments involving hundreds of thousands of fish, data show that the effects of the CVP and
12 SWP export pumps are very small and questionable.

13 (2) Information Providing A Plausible Explanation For Why
14 Effects Of CVP And SWP Exports On Abundance Of
Salmon Are Small Or Nonexistent

15 CVP and SWP exports have long been a focus of investigations concerning salmon. How
16 can this be, that the many years of data show that both direct and indirect effects of CVP and
17 SWP exports on salmon survival through the Delta are very small and questionable? The answer
18 can be found in two kinds of data. The first kind is the data showing the number of outmigrants
19 caught in traps upstream of the Delta, the salvage data at the CVP and SWP pumps, and the catch
20 of smolts at Chipps Island, at the western boundary of the Delta. (See Exhibit 7, attached hereto.)
21 These counts of salmon at different locations show when they move past different locations and,
22 taken together, indicate two important things:

- 23 • There is typically a period of weeks between the time the peak migration
24 enters the Delta and the time it leaves the Delta.
- 25 • The peak migration out of the Delta tends to coincide with the peak in
salvage at the export pumps.

26 ¹⁹ The data that formed that basis for Newman's analyses were for fall run salmon. Smolts of
27 this race are smaller when they enter the Delta than smolts of the other races, and should thus be
28 more vulnerable to export effects than other races. Therefore, Cramer's use of Newman's model
for winter run is environmentally conservative.

1 In other words, salmon enter the Delta and are capable of hanging out there for weeks. When
2 they start to migrate, some of them (typically, very few, relatively speaking, as discussed above)
3 show up at the CVP and SWP export pumps. The idea advanced by some that salmon smolts are
4 "drawn to the pumps" where they do not want to go, is preposterous on the face of it. If small
5 salmon are "drawn to the pumps" from all over the Delta, there would be no fish in any of the
6 world's streams and rivers.²⁰

7 This brings us to the second kind of data, the results of recent experiments on smolts
8 passing the Delta Cross Channel and Georgiana Slough. These smolts had small radio
9 transmitters inserted in them. Boats with receivers tracked their signals. These data show salmon
10 migrating down the Sacramento River. They move more or less with the tides, sort of a three-
11 steps-downstream-two-steps-upstream progression with each ebb-flood cycle. They are moving
12 toward salt water because they are physiologically compelled to do so. They appear to be quite
13 efficient at it. However, if they pass the Cross Channel on the flood tide with the gates open,
14 almost all of them are swept into the Cross Channel because that is where all the water is going.
15 If they pass on the ebb, almost all of them move on down the Sacramento River.

16 In other words, salmon can be swept off the main stem rivers into side channels by tidal
17 sweeping flows if they happen to reach a junction at the "wrong" tidal phase. Once swept off the
18 main stem, they can be further diverted into other side channels. Once off the main stem rivers,
19 their progression to the ocean takes longer. They are more susceptible to predation and other life-
20 threatening events.

21 So, for salmon migrating through the Delta, which is tidal throughout, it is a roll of the
22 dice, so to speak, at every junction. The more junctions there are, the higher the chance of getting
23 swept off the main stem. There are a lot more junctions to be unlucky at for San Joaquin salmon
24 than for Sacramento salmon. Maybe that is one reason why survival for San Joaquin smolts is
25 lower than for Sacramento smolts.

26 ²⁰ If the pumping by the CVP and SWP could draw fish, then certainly outflow of a river, which
27 is many times greater in magnitude than the rate of CVP and SWP pumping, would certainly have
28 at least the same effect. Outflow would "flush" all fish downstream into the ocean leaving no fish
in any stream or river.

1 Note that smolts are not susceptible to these tidal sweeping flows at junctions if they are
2 not migrating. Also, if they are migrating, some of them will be very unlucky and eventually
3 swept into the southeastern Delta, close enough to the CVP and SWP export pumps that they will
4 be "drawn to the pumps." That is consistent with the data showing that peak migration out of the
5 Delta tends to coincide with peak salvage at the CVP and SWP export pumps.

6 Finally, the percentage of salmon, albeit small, that shows up at the pumps, is not
7 predictable. Sometimes it is 0%, sometimes 0.5%, occasionally higher than 1%. Currently, as far
8 as the Authority can tell, it appears to be random. That randomness is also consistent with the
9 idea that reaching the CVP and SWP export pumps is the result of being "unlucky" at a series of
10 junctions.

11 It appears that tidal sweeping at junctions is a primary, albeit indirect, cause of mortality
12 for outmigrating smolts. If CVP and SWP exports are to affect that survival, exports must affect
13 tidal sweeping flows. However, tidal sweeping flows are large, and the junctions tend to be some
14 distance from the CVP and SWP export pumps. For most junctions, exports have very small
15 effects on tidal sweeping flows. This would explain why the coded wire tagged data show small
16 or nonexistent and uncertain effects of CVP and SWP exports on smolt survival. CVP and SWP
17 exports may be important to net, tidally averaged, flows, but not to the much larger tidal sweeping
18 flows that exist throughout most of the Delta and are critical in determining whether smolts are
19 diverted off the main stem river migration paths to the ocean.

20 (3) Information Regarding the Small Or Non-Existent Effects of
21 CVP and SWP Exports On Abundance Of Delta Smelt

22 There is no correlation between the fall midwater trawl (FMWT) index of sub-adult smelt
23 abundance (the "official" index) and the summer townet (STN) abundance index. (See Exhibit 8,
24 attached hereto.)²¹ Entrainment of both adult and larval/juvenile (hereinafter referred to as
25 "juvenile") occurs prior to the STN index. There is no correlation between any measure of adult

26 ²¹ There actually is a correlation if you include all years' data, but those years cover some
27 radically different ecological conditions, so the correlation is likely the result of common factors
28 affecting both the STN and FMWT, rather than the STN affecting the FMWT. There is no
correlation for the "post-decline" period, after 1980.

1 or juvenile entrainment and the STN index. (See Exhibits 9, 10, 11 and 12, attached hereto.)
2 Therefore, there can be no correlation between entrainment and the FMWT index, and there is
3 not.

4 There is, however, a correlation between the STN index and the previous FMWT index,
5 See Exhibit 13, attached hereto, that is, between the abundance of juvenile offspring and
6 abundance of their parents. This means that the STN is good enough data to show a correlation,
7 over several life stages and one generation, between the STN and previous FMWT (juvenile
8 offspring to parents). If so, it ought to be good enough to show a correlation between the
9 subsequent FMWT and STN (subsequent adults to juveniles) if one existed. It does not show a
10 correlation. This analysis suggests that within the year that effects occur it is important to the
11 effect upon the overall population.

12 (4) Information Providing A Plausible Explanation For Why
13 Entrainment Is Not Correlated With Abundance

14 How is this possible, that entrainment of adults and juveniles is not correlated with
15 subsequent abundance and that even juvenile abundance in the summer does not correlate with
16 sub-adult abundance in the fall? Dr. Bill Bennett first suggested the answer. (See 2005 CALFED
17 Delta Smelt White Paper prepared by Dr. Bill Bennett.) Bennett analyzed a number of smelt
18 from 1999 and found that many were starving in the late summer. Smelt primarily eat two
19 zooplankton, Eurytemora (either native or, maybe, introduced decades ago) and Pseudodiaptomus
20 (introduced in 1986).

21 Keying on Bennett's findings, the Authority analyzed the co-occurrence of delta smelt
22 with both of these zooplankton in July for the last 20 years. The Authority found a highly
23 significant correlation between this July co-occurrence and the subsequent FMWT index. (See
24 Exhibit 14, attached hereto.) The primary area of co-occurrence was the lower Sacramento River
25 and, in some years, nearby areas. (See Exhibit 15, attached hereto.) That is, if you have
26 relatively high smelt abundance and a high density of food in the same place (lower Sacramento
27 River or nearby) in the late summer, the subsequent FMWT index of abundance will probably be
28 high. If you have few smelt or, more likely, low food density, or both, the FMWT abundance

1 index will probably be low.

2 There is no correlation between Pseudodiaptomus density and lower Sacramento River
3 flow in July. (See Exhibit 16, attached hereto.) A correlation with flow would suggest some
4 relationship with exports, but no such correlation exists. However, there is a strong downward
5 trend in Pseudodiaptomus density in the lower Sacramento River with time, approaching zero last
6 year. (See Exhibits 17, 18 and 19, attached hereto.) It appears that Pseudodiaptomus density in
7 the lower Sacramento River and nearby areas in the late summer is the primary determinant of
8 delta smelt abundance in the fall. If so, and if there is no relationship with river flow, the only
9 way exports could be affecting the FMWT is by entraining (or otherwise affecting) smelt or
10 Pseudodiaptomus that would otherwise have found their way to the lower Sacramento River in
11 the late summer.

12 Maybe this happens in some years, say, years when spring Delta outflow is low and higher
13 fractions of smelt are near the CVP and SWP export pumps. It clearly does not happen in all
14 years. However, even in drier years, it is not clear that the smelt that otherwise would have been
15 entrained would have migrated downstream and significantly contributed to the abundance of
16 smelt in the lower Sacramento River or nearby in the late summer. This would explain the lack of
17 correlation between the FMWT and entrainment described above. Maybe there is an effect, but it
18 is likely to occur only in years with dry springs, and it may be small even in those years. This
19 means that smelt entrainment should be managed in some years. In other years, it means little.

20 d. The Method For Analyzing The Data

21 (1) Understanding Effects Of Changes In Operations on
22 Estuarine Species (Generally)

23 Three species show a relationship between adult abundance and the springtime average
24 X2 (the distance from the Golden Gate of the location of the 2 ppt salinity): crangon shrimp,
25 starry flounder (age 1), and longfin smelt. The location of X2 is controlled primarily by Delta
26 outflow, so these species also show a relationship with Delta outflow. Two more species, splittail
27 and American shad, show a relationship between adult abundance and X2, but Bay-Delta
28 scientists now believe that this is actually a reflection of a relationship with Delta inflow, not

1 outflow. Other species show a relationship between early life stage abundance or survival and
2 X2, but none of these early life stage measures of abundance or survival are correlated with adult
3 abundance of those species.

4 All of these relationships are of the form: $\text{LOG}(\text{abundance}) = a + b\text{LOG}(\text{outflow or}$
5 $\text{inflow})$. The relationship between X2 and outflow is of the form: $X2 = m + n\text{LOG}(\text{outflow})$.
6 Therefore, for crangon shrimp, starry flounder (age 1), or longfin smelt, a graph of abundance vs.
7 $\text{LOG}(\text{outflow})$ or abundance vs. X2 shows a relationship that is roughly a straight line. Similarly,
8 for splittail and American shad, a graph of abundance vs. $\text{LOG}(\text{inflow})$ shows a roughly straight
9 line relationship.

10 These relationships can be used to estimate the change in abundance for any given change
11 in outflow (or X2) or inflow. For example, consider longfin smelt. Its relationship with outflow
12 is as follows:

$$13 \quad \text{Longfin smelt abundance} = 0.0015 * (\text{Jan-Jun avg. outflow})^{1.31}^{22}$$

14 This relationship is simply the $\text{LOG}(\text{abundance}) = a + b\text{LOG}(\text{outflow})$ equation, solved for
15 abundance. Consider a change in outflow, say, one produced by flexing the X2 objective. If
16 initial outflow is "Oi," final outflow is "Of," initial abundance is "Ai," and final abundance is
17 "Af," the following equation can be established $A = 0.0015 * O^{1.31}$. Also, the percentage change
18 in abundance is simple 100% times the change in abundance divided by the initial abundance or
19 $100\% * (Af - Ai) / Ai$. Substituting the initial and final conditions into this equation yields the
20 following equation for estimating the percentage change in abundance for any given change in
21 average January-June Delta outflow:

$$22 \quad \% \text{ change in abundance} = 100\% * (Of/Oi)^{1.31} - 1$$

23 As an example, consider a change in average January-June Delta outflow from 29,000 cfs
24 to 28,000 cfs. This amounts to about 360,000 acre-feet of water (1,000 cfs * 181 days * 1.98
25 AF/cfsday). The change in longfin smelt abundance associated with this outflow change would
26 be a decrease of about 4%. This example demonstrates that population level changes in

27
28 ²² Outflow is in cubic feet per second (cfs) and the "^^" symbol indicates a power.

1 abundance of the three "X2 species" resulting from changes in Delta outflow can be estimated
2 and that, at higher outflows, the changes can be relatively small, but the water savings
3 significantly large. Similar estimates could be made for splittail and American shad population
4 effects from changes in Delta inflow.

5 (2) Understanding Effects Of Changes In Operations On The
6 Delta Smelt (Specifically)

7 Recall that no statistically significant relationships have been found between entrainment
8 of adult or larval/juvenile (hereinafter referred to as "juvenile") delta smelt and subsequent
9 abundance. The reason for the lack of relationships is described above and relates to the
10 dominance of delta smelt and prey co-occurrence in the late summer in controlling future
11 abundance.

12 However, delta smelt are listed as a threatened species under both the state and federal
13 Endangered Species Acts, and, for this reason, their take (entrainment) must be managed even
14 though the population level effects of this management may be insignificant. The attached figure
15 shows the lack of relationship between juvenile smelt abundance (the summer townet abundance
16 index) or sub-adult abundance (the fall midwater trawl index) and relative salvage of adult delta
17 smelt. Relative salvage is adult salvage (a measure of entrainment) divided by the previous
18 year's FMWT index (a measure of the total number of adults, of which some were salvaged).

19 It is possible that a relationship between adult entrainment and subsequent abundance
20 exists, but the measure of adult entrainment (salvage/previous FMWT) is too poor an estimate of
21 entrainment to reveal the relationship. The Authority offers two comments in this regard: First,
22 the Authority notes that adult salvage/previous FMWT is the measure of adult entrainment used
23 in the Delta Smelt Risk Assessment Matrix, the basis for export curtailments to manage
24 entrainment. Second, the Authority notes that the importance of delta smelt and prey co-
25 occurrence in the late summer is consistent with the lack of relationship between relative adult
26 salvage and subsequent abundance.

27 Juvenile entrainment cannot be measured by salvage. Delta smelt are not counted at the
28 CVP and SWP export facilities until they reach 20 mm in length. Entrainment of smaller smelt is

1 not measured. The Authority developed a method for estimating the percentage of juvenile smelt
2 entrained at the CVP and SWP export pumps. The Authority used the results of 20 mm surveys
3 (from 1995 through 2004) to estimate the distribution of smelt (i.e., the fraction of delta smelt at
4 each sampled station throughout the estuary), and the Authority used DWR's Particle Tracking
5 Model to estimate the chance of being entrained from each station during the approximate two
6 weeks between 20 mm surveys.²³ The product of the fraction of smelt at a station and the chance
7 of being entrained from that station by the time of the next survey, summed over all stations, is an
8 estimate of the fraction of the hatched population entrained from that survey to the next. (See DEP
9 Newsletter, Summer, 2004.)

10 Spawning of delta smelt is largely dependent on water temperature. Souza reports that
11 spawning begins when water temperatures rise to about 12 degrees C. Hatching occurs about 12
12 days later. Eggs are attached to underwater plants and other substrate and cannot be sampled or
13 entrained. Different parts of the Delta warm up at different times. Generally, the southeastern
14 Delta warms up early. Therefore, even though most smelt may spawn elsewhere, the progeny of
15 smelt that spawned near the CVP and SWP export pumps may, in fact, show up first in the 20 mm
16 surveys, leading to the incorrect conclusion that most of the population was near the export
17 pumps and susceptible to entrainment.

18 The Authority estimated the fraction of smelt that had spawned by the time of each
19 survey. The Authority corrected the fraction of the hatched population entrained by the
20 temperature-based estimates of the fraction hatched by the time of each survey. Repeating this
21 process for all eight surveys each year produces an estimate of the total annual juvenile
22 entrainment.

23 The Authority then attempted to find a relationship between these estimates of annual
24 juvenile entrainment and subsequent abundance. The Authority tried to correlate subsequent
25 abundance (STN and FMWT indices) with percentage juvenile entrainment. The Authority also

26 ²³ For purposes of its method for estimating the percentage of juvenile smelt entrainment, the
27 Authority accepted the general presumption that Delta smelt are thought to behave as neutrally
28 buoyant particles. For larger smelt that can migrate, the assumption of neutral buoyancy would
tend to overestimate entrainment.

1 tried to correlate percentage juvenile entrainment with the residuals of the STN versus previous
2 FMWT correlation and with these residuals and the relative adult salvage estimates. The
3 Authority found no relationship between percentage juvenile entrainment and subsequent delta
4 smelt abundance.

5 Nevertheless, the Authority cannot rule out the possibility that juvenile entrainment may
6 affect subsequent abundance in years when two conditions occur: (1) when juvenile entrainment
7 was high, or (2) when smelt that were entrained would otherwise have constituted a significant
8 fraction of the population in the lower Sacramento River and nearby in the late summer. Whether
9 this is occurring or not, the Authority would not expect a relationship for all ten years' data
10 between percentage juvenile entrainment and subsequent abundance.

11 Note also that if percentage juvenile entrainment significantly affects subsequent FMWT
12 abundance, it would be because the product of the percentage entrainment and the fraction of
13 entrained smelt that otherwise would have reached the lower Sacramento River in the late
14 summer is significant. It could be that both are occurring but neither is high enough to be
15 significant. The data relating subsequent FMWT and percentage juvenile entrainment (*See*
16 *previous exhibits*) suggest that if percentage juvenile entrainment is less than about 20%,
17 subsequent high FMWT indices are not ruled out. Nor are they guaranteed.

18 The Authority found an excellent, general (i.e., over all 20 mm surveys each year)
19 relationship between the percentage of juvenile entrainment (hatched and unhatched) in the
20 southeastern Delta and the average Delta outflow from mid-March to mid-April. (*See Exhibit 20,*
21 *attached hereto.*) The Authority also found a general relationship between the annual percentage
22 juvenile entrainment and the product of the percentage in the southeaster Delta and the average
23 export rate in April and May. (*See Exhibit 21, attached hereto.*) These two relationships can be
24 used to estimate a target export rate in April and May given the average mid-March to mid-April
25 Delta outflow and a target annual percentage juvenile entrainment. The attached table, Exhibit
26 22, shows the target export rate for April and May related to the Delta outflow and target
27 percentage juvenile entrainment. As described above, the "default" target percentage juvenile
28 entrainment should probably be 20%. As can be seen from the table, this would produce target

1 export rates considerably higher than those occurring in the recent past. Recall, as described
2 above, there is no general relationship between percentage juvenile entrainment and subsequent
3 abundance.

4 (3) Understanding Effects Of Changes In Operations On
5 Salmon

6 As described in the Authority's "Memorandum Supplementing Information And
7 Providing Additional Comments On The Delta Cross Channel Gates Operations and Salmon
8 Protection Objective," evaluations are either available or may be performed that correlate
9 environmental effects (e.g., change smolt survival through the Delta) to a given change in
10 operation (e.g., increasing export rate); correlations that can and should be used to evaluate the
11 efficacy of each action undertaken through comparative estimates of population level effects of
12 the existing course of action versus a proposed change in the action.

13 For example, existing data can be used to answer the question: how much does the
14 population of smolts reaching Chipps Island change for a given change in operation. In layman's
15 terms, the answer to that question amounts to estimating the effect with and without the action,
16 and comparing the difference. In algebraic terms, the answer to that question amounts to taking
17 the partial first derivative of the correlation equation relating the desired effect to the action.

18 Applying these algebraic terms, assuming there is a statistically significant relationship
19 between smolt survival and export rate, it is possible to estimate the survival for any export
20 curtailment using the following formula:

21
$$F = (N*S2 - N*S1)/N*S1$$

- 22 F = Fractional Change in the population surviving to Chipps Island
23 N = Number of smolts
24 E1 = Initial export rate
25 E2 = Rate after the curtailment
26 S1 = Survival of smolts through the Delta for export rate E1
27 S2 = Survival of smolts through the Delta for export rate E2.

28 In other words, if N smolts enter the Delta, then N*S1 of them will survive with exports at E1,
and N*S2 of them will survive with exports at E2. The fractional change in the population
surviving to Chipps Island will be the difference in the population divided by the original

1 population. Note that when the formula is applied, the number of smolts (N) cancels out, leaving
2 the fractional change in population as $(S2-S1)/S1$. Therefore, it is not necessary to know the
3 population size to estimate the fractional change in population for a given change in action. This
4 position is not held by the Authority alone.

5 Dr. Kimmerer recognizes that fractional change in population of the affected life stage is
6 the currency by which actions can be compared, provided that populations of successive life
7 stages are proportional to each other. (WK-EXH-01.) Indeed, as discussed previously by the
8 Authority, Dr. Kimmerer presented such comparisons to the Water Board, concluding that the
9 actions that made a difference in the winter run decline and subsequent partial recovery were
10 upstream and ocean actions, not actions in the Delta (i.e., Delta Cross Channel gate closures or
11 export curtailments). (See WK- EXH - 01.)

12 3. Potential Flexible Implementation of Those Objectives is Needed During
13 Those Times When Changes In The Outflow Objective or Exports
14 Objective Would Cause Little Or No Change In the Level Of Protection
15 For The Fish and Wildlife

16 The Authority proposes the following process to ensure that water is not wasted during
17 those times when relatively small changes to the outflow or export limit objective could be made
18 with little or no change in the level of protection for fish and wildlife and with significant water
19 savings. The process reflects the new understanding of the effect of changes in operations on
20 estuarine species, including delta smelt, and salmon.

21 Initially, to guide the process, the Water Board should articulate the following principles:
22 (1) flexible implementation of the objectives is needed to more accurately reflect the real-time
23 location of fish in the estuary, the effect of in-Delta actions on upstream fishery needs, and the
24 balance between the water resources expended and fishery benefits derived, and (2) flexible
25 implementation of the objectives must result in improvements in the water resources available for
26 all beneficial uses of water developed in the Delta.

27 Pursuant to those guidelines, the Water Board should then authorize the flexible
28 application of the outflow and export limits objectives, consistent with the following protocols for

1 the initiation, evaluation, and selection of flexing proposals:²⁴

2 **Consultation:** A consultation process between Reclamation, DWR,
3 USFWS, NOAA Fisheries, CF&G and the SWRCB will be initiated to
4 assess appropriateness of flex when: (a) Delta is in balance and (b)
5 immediately before an objective begins controlling Delta operations.

6 **Trigger for Consideration of Flex:** Flexing alternatives will be
7 considered if requested by any one of the consulting agencies either (a)
8 during a consultation, or (b) during the time a particular objective is
9 controlling Delta operations if there is a change in the fishery or hydrologic
10 conditions that existed at the time the objective became controlling.

11 **Process for Consideration of Flex:**

- 12 (a) Describe alternatives – ways in which the objective could flex,
13 (b) For each alternative, describe how the saved water should be subsequently
14 used for fishery, water supply, and water quality purposes (saved water
15 would be shared (i.e., 50% for water supply/water quality purposes and
16 50% for environmental purposes).)
17 (c) For each alternative, provide a science-based evaluation, including (1)
18 quantified estimates of population level effects on fishery resources, (2)
19 quantitative estimates of effects on water supply and water quality and (3)
20 quantified estimates of uncertainty (i.e., comparison of no flex with flex
21 alternatives to determine relative impacts).

22 **Sideboards:** Establish numerical "sideboards" (limits on flexing). For
23 example:²⁵

- 24 (a) For the E/I Ratio – A sliding scale based on the prior year's delta smelt fall
25 midwater trawl index, with no flex greater than 10%.
26 (b) For X2 – Flex would only be considered when the Roe Island location is
27 triggered. No flex would allow Delta outflow to fall below 15,000 cfs. No
28 flex would be permitted to move the February through June average
location of X2 by more than one kilometer.

SWRCB Involvement: If Reclamation, DWR, USFWS, NOAA Fisheries
and CF&G jointly agree on a flex option, the proposed flex will be
transmitted to the Executive Officer of the SWRCB who will have the
authority to veto the proposal.

Public Review: When a possible flex is considered, opportunities for
public review and comment on the evaluation methods and flex options
must be provided, to the extent consistent with the timeline required for
decision making.

Per Flex Consideration Reporting: Whether or not flexing is authorized,
each time a consideration of flex is triggered, the Reclamation, DWR,
USFWS, NOAA Fisheries and CF&G will prepare and submit to the

²⁴ The specific proposal presented herein focuses on flexibility for the outflow and exports objectives. The proposal could apply to other objectives – i.e., Rio Vista although appropriate sideboards would need to be developed.

²⁵ Sideboards should be set forth in a document, outside the revised water quality control plan, such that the sideboards could be easily amended if and when necessary.

1 SWRCB a report describing the proposal and the decision, including all
2 factors required under the "process" section and the reasons the decision
was made. The SWRCB shall make the report available for public review.

3 **Annual Reporting:** At the end of each year, Reclamation, DWR, USFWS,
4 NOAA Fisheries and CF&G shall prepare and submit to the SWRCB an
5 additional report summarizing flexing activities, accounting for the
6 changed water use, and estimating the effects on beneficial uses of flexing
that occurred or resulted over the course of the year. The SWRCB shall
also make this second, annual report available for public review.

7 4. The Only Other Existing Proposal For Adaptive Management Of The
8 Outflow Objective Is Significantly Deficient

9 For the outflow objective, the Water Forum proposes a three-step process that would also
allow for adaptive management of the outflow objective:

10 **Step 1:** The Management Agencies (USFWS, NOAA Fisheries, CF&G) determine
11 if lower American River salmonids will be at risk, and if so whether American
12 River water is available through the environmental water account or pursuant to
section 3406(b)(2) of the CVPIA for use instream, to avoid the anticipated
impacts,

13 **Step 2:** If American River water is not available for use, Reclamation and DWR
14 determine if an alternative compliance strategy is feasible, including alternatives
15 that would result in compliance through (a) reductions in CVP/SWP exports (use
16 of water available through the environmental water account or pursuant to section
17 3406(b)(2) of the CVPIA) and concurrent releases from Shasta and/or Oroville
Reservoirs, (b) reductions in CVP/SWP exports (use of water available through the
environmental water account or pursuant to section 3406(b)(2) of the CVPIA)
following a runoff event to achieve early compliance, and/or (c) increases in Delta
inflow from Folsom to achieve early compliance, and

18 **Step 3:** If nothing else works, allow flexing of objective.

19 (*See WF - EXH - 02. See also WF - EXH - 01.*) The proposal is improper and arbitrary.

20 First, the proposal is improper because it appears to exceed the scope of the issue before
21 the Water Board, in violation of the ruling in *United States of America v. State Water Resources*
22 *Control Board*, 182 Cal.App.3d 82 (1986). That is accomplished by confusing the actions
23 properly part of the water quality review with those that must be part of a water rights proceeding.
24 The Water Forum seeks to impose on Reclamation and DWR, through its proposed Steps 1 and 2,
25 a requirement to reoperate the CVP and SWP (i.e., take action to achieve a level of protection)
26 before consideration is given to the level of protection. The issue before the Water Board,
27 however, is what changes need to be made to the 1995 WQCP to ensure reasonable protection of
28 the beneficial uses and to prevent nuisance. Once that issue is addressed, the Water Board will

1 have to determine who is responsible for achieving the level of protection.²⁶

2 Second, the Water Forum's proposal is arbitrary because it ignores important, new
3 information, and looks in "Step 2" at solely reducing CVP and SWP exports. New information
4 shows that at times the water costs for meeting the outflow objective are high and those costs
5 could be significantly reduced with limited or without any the risk to fish species simply by
6 allowing a level of flexibility in the outflow objective. In other words, because of our new
7 understanding of the science -- the effect of changes in outflow on fish and water resources -- the
8 Water Board should look first to flexibility in the objectives that would result in an avoidance of
9 potential risks to lower American River salmonids, potentially significant water savings, with
10 only a small or with no impact to "X2 species." Further, while reductions in CVP and SWP
11 exports may be one possible "last resort" responsive action, another could be reductions in
12 exports by those who divert water directly from the American River. The Water Forum proposal
13 arbitrarily places the potential burden of reconciling the conflict between upstream and
14 downstream fishery resources on the CVP and SWP. It should not do that.

15 5. No Information Was Presented That Supports An Amendment Of The
16 Delta Cross Channel Gates Closure, Delta Outflow Exports Objectives
17 That Would Justify The Water Board Making Them More Restrictive

18 Several stakeholders suggested increased (1) days of available Delta Cross Channel Gate
19 closure, (2) increased Delta Outflow, and (3) increased restrictions on exports. Specifically,

- 20 • TBI asks the Water Board to include up to an additional 15 days of Delta
21 Cross Channel Gate closure. (BAY - EXH - 01. *See also* BAY - EXH -
22 02.)
- 23 • TBI asks the Water Board to modify "the February - June Delta outflow
24 objective to maintain flows and X2 location assuming a 1956-68 Level of
25 Development." (BAY - EXH - 04. *See also* BAY - EXH - 05.)
- 26 • TBI asks the Water Board to adopt new export limits for the March 15-
27 June 15 period, because of an asserted need to "protect estuarine habitat
28 and San Joaquin Basin Chinook salmon outmigration." (BAY - EXH - 06.)

²⁶ Not only does the proposal presuppose that Reclamation and DWR will be responsible for meeting the objective, but it may also be objectionable because it seeks to limit the discretion of Reclamation and DWR by requiring them to meet the objective through specific operations. If they are assigned responsibility, Reclamation and DWR should maintain the discretion as to the manner in which they comply.

- 1 • SDWA seeks to change in the export objective to limit exports during the
2 spring pulse flow and to preclude pumping that result in null zones or
reverse flows. (SDWA - EXH - 02.)
- 3 • TBI and California Striped Bass Association seeks limits on exports, at
4 least until fish protection facilities "upgraded." (BAY-EXH-06; CSBA -
EXH - 01.)

5 None of the limited information presented in an attempt to support the requests warrants an
6 amendment objectives.

7 a. There Is No Need For Up To An Additional 15 Days Of Delta
8 Cross Channel Gate Closure

9 TBI requested reconsideration and an amendment that would allow the Delta Cross
10 Channel gates to be closed for up to 15 additional days. (See BAY-EXH-01 at p. 2.) The request
11 was based upon a belief that the additional days are needed to "improve survival of winter-run
12 Chinook salmon and other juvenile fish in the Delta [and] allow for more complete protection
13 throughout December and January, when risks to juveniles are likely to be higher." (BAY-EXH-
14 01 at p. 2.) That statement is simply not true.

15 As the Authority explained in its Memorandum Supplementing Information And
16 Providing Additional Comments On The Delta Cross Channel Gates Operations and Salmon
17 Protection Objective:

18 (1) The science does not support a finding by the Water Board that the availability
19 of up to 15 more days of closure during the November 1 through January 31 period
would provide significant, if any, additional benefits to fish,

20 (2) Even if science provided strong support for increasing the number of days of
21 closure, there is no demonstrated need that those additional days demand an
22 amendment to the existing objective, as the gates have never been closed during
the November-January period for 45 or more days to benefit fish and wildlife since
23 the CVP and SWP began operating to meet the objectives set forth in the 1995
WQCP, and

24 (3) Even if up to 15 more days of closure would benefit fish, authority exists under
25 state and federal law (outside of the regulations of the 1995 WQCP) to close the
Delta Cross Channel gates for more then 45 days during the November 1 through
January 31, if needed.

26 Because of the potential for significant redirected impacts, if the Water Board accommodates
27 TBI's request and authorizes additional days of closure during the November 1 through January
28 31 period, the Authority requests that it do so with a condition that the additional days of closure

1 can occur only if there would be no adverse impacts to water quality or water supplies.

2 b. It Would Be Inappropriate To Modify The February – June Delta
3 Outflow Objective To Maintain Flows And X2 Location Assuming
4 A 1956-68 Level Of Development

5 TBI requests that the Delta Outflow objective be revised to maintain February-June flows
6 and X2 values assuming a 1956-1968 Level of Development. (BAY-EXH-04 at p. 4.) The basis
7 for this request is limited. TBI appears to argue that the 1956-1968 Level of Development
8 assumption is needed to provide increased protection for the Bay-Delta Estuary. (*See id.* at pp. 4-
9 7.) Simply put, the proposal by TBI is significantly deficient. TBI provides no credible
10 information to support a change in the outflow objective to maintain February-June flows and X2
11 values assuming a 1956-1968 Level of Development.

12 Level of Development is a factor in the formula used to determine the number of days
13 when maximum daily average electrical conductivity of 2.64 mmhos/cm must be maintained at
14 either Chipps Island or Port Chicago. For the 1995 WQCP, the Level of Development assumed
15 was the average from 1968 to 1975 (1971.5), and footnote 14 for table 3 reflects the number of
16 days required to meet the outflow objective. TBI seeks to have the Level of Development
17 changed to assume a 1956-1968 Level of Development. That change may have significant
18 impacts on other beneficial uses of water from the Bay-Delta Estuary.

19 Attached as Exhibits 23, 24, and 25 are several tables portraying the existing X2
20 requirement and comparing the required number of days to what would be required by TBI's
21 proposed increase. Exhibit 23, marked as Table A, is a reproduction of the table in D-641 which
22 portrays the required number of days for X2 compliance at the Port Chicago and Chipps Island.
23 Exhibit 24, marked as Table B, computes the increased number of days that would be required if
24 the proposal by TBI were required. The values shown in this table were computed based on the
25 equation and assumptions shown in CCWD-EXH-12. Exhibit 25, marked as Table C, portrays
26 the differences in the required number of days at the compliance locations between the existing
27 D-641 requirement and TBI's proposal.

28 To thoroughly explore the water supply implications of the new proposed requirement, it
would be necessary to perform a detailed modeling analysis. While time limitations preclude

1 such modeling, it is apparent from cursory consideration that the additional number of days
2 indicated in Table C would require more water than is currently utilized to comply with X2 and
3 will exacerbate the conflicts and difficulties that have surfaced in recent years. Based on the
4 potential additional outflows that could be required in the TBI's proposal, the additional volume
5 of water that would be required for a given month could be as much as 400,000 acre-feet.
6 Despite the clear potential for significant water costs, TBI presents no information suggesting the
7 types of improvement it expects to see in the level of protection for the Bay-Delta Estuary, if the
8 Level of Development is changed to the 1956-1968 period. Simply put, TBI does not present the
9 information needed that would justify the change it requests, particularly given the risk to other
10 beneficial uses.

11 c. The Water Board Must Deny The Request By TBI to Adopt New
12 Export Limits For The March 15-June 15 Period, Because Of An
13 Asserted Need To "Protect Estuarine Habitat And San Joaquin
Basin Chinook Salmon Outmigration"

14 TBI requests that the March 15-June 15 export limit should be revised. (BAY-EXH-06 at
15 p. 1.) The information presented to support that recommendation is again limited. TBI
16 apparently makes the request based on a general assertion that the change is needed to "more
17 adequately protect estuarine habitat and San Joaquin chinook salmon outmigration." (See *id.* at
18 pp. 1-4.) The information presented provides no basis for the proposed change. Unfortunately,
19 TBI seems to have formulated its recommendations based on its long-standing policies rather than
20 on analysis of data collected since 1995.

21 As described previously, data collected to date show the following:

22 Entrainment losses at the pumps for salmon are typically trivial, less than 1% of
23 outmigrants. That is true for Sacramento runs and San Joaquin fall run with a
24 barrier at the head of Old River. Estimates of indirect mortality, that is, mortality
occurring outside the export facilities but associated with exports, indicates that
export mortality is small or insignificant and uncertain. (See WK - EXH - 01).

25 TBI also fails to mention the lack of correlation between export rate and San
26 Joaquin smolt survival during the VAMP experiments. (See VAMP annual
reports).²⁷

27 The reports can be found at: <http://www.sjrg.org/technicalreport/default.htm>.

1 There is no correlation between delta smelt entrainment and subsequent abundance
2 of juvenile (summer townet) or sub-adult (fall midwater trawl) smelt. In fact, there
3 is no correlation between juvenile abundance (measured after most entrainment
4 occurs) and subsequent sub-adult abundance. Food limitation in the late summer
largely determines sub-adult abundance in the fall. So far, no connection has be
established between exports and either delta smelt abundance or food density in
critical areas in the late summer. (See the Authority's exhibit on direct mortality).

5 Export reductions to increase Delta outflow can require large amounts of water
6 and produce small increases in abundance (less than 5%) for only three unlisted
7 species if Delta outflows are relatively high. Water requirements for export
8 reductions are more reasonable if Delta outflows are low, but the only benefits that
9 have been quantified are to three unlisted species, crangon shrimp, starry flounder,
10 and longfin smelt.

11 TBI continually refers to "improved estuarine conditions" or similar language. If
12 improved estuarine conditions result from any action, such as an export
13 curtailment, these improvements, if significant, should be manifested as increases
14 in the population of species near the top of the food chain. Otherwise, one can
15 conclude that the improvements simply weren't that important. The only evidence
16 for "improved estuarine conditions" is the abundance-X2 relationships or
17 reductions in entrainment. The X2 relationships show that small effects on only
18 three unlisted species can require very large amounts of outflow and, as discussed
19 above, there is no evidence that entrainment has population level effects for
20 salmon or delta smelt.

21 TBI also fails to mention the extremely poor survival of San Joaquin River smolts
22 in the VAMP experiments, under conditions of augmented river flow, a barrier at
23 the head of Old River, and exports at the lowest practical level of about 1,500 cfs
24 from mid-April to mid-May. Survivals averaged about 15% until last year when
25 they were even lower. Typical survivals of smolts entrained at the Tracy Pumping
26 Plant and trucked downstream are about 30%, roughly double that in the Delta
27 portion of the San Joaquin River. Therefore, TBI's are so misguided as to actually
28 constitute conditions that would decrease smolt survival through the Delta.

For these reasons, TBI fails to present information showing or even suggesting how fish
and wildlife could benefit from additional CVP and SWP export curtailments. Once again, this is
particularly disturbing because while modeling has not been performed, it is apparent from just
preliminary analysis that the proposed change could result in losses of hundreds of thousands of
acre-feet of water in any given year. Such a presentation must be rejected.

d. The Requests That The Water Quality Control Plan Limit Exports
Until Fish Protection Facilities Are Upgraded Or When Null Zones
Or Reverse Flows Are Seen In The South Delta Must Be Dismissed

TBI and the California Striped Bass Association request that the Water Board review the
status of efforts to upgrade the CVP and SWP fish protection facilities. (BAY-EXH-06 at p. 1;
CSBA-EXH-01.) SDWA requests that the footnotes applicable to the export objective be

1 modified to preclude exports by the CVP and SWP that result in changes to flows in the South
2 Delta which cause null zones or reverse flows which adversely affect water dissolved oxygen
3 levels or impair other beneficial uses. (SDWA-EX-02 at p. 3. SDWA-EX-02 at p. 2.)
4 Notwithstanding the substantive objections the Authority has with these recommendations, they
5 must be dismissed because they are outside the scope of the issues before the Water Board. The
6 proposals do not address what is the reasonable water quality needed to protect beneficial uses.
7 They seek to address concerns that either (1) are being addressed through a forum beyond the
8 direct authority of the Water Board, or (2) could be addressed through the Water Board's water
9 rights proceeding that will follow the periodic review (i.e., how the objectives may be achieved).

10 **E. Chloride Objectives**

11 1. Summary of Issues

12 The Revised Notice presented the issues as follows:

13 Should the SWRCB amend the value or description of the 150 mg/l chloride
14 objective in the water quality objectives for municipal and industrial beneficial
15 uses (Table 1 of the 1995 Plan)? How should the value or description be modified
and what are the scientific and legal arguments in support of and against such
modifications?

16 Should the SWRCB amend compliance location C-5 (CHCCC06) in the water
17 quality objectives for municipal and industrial beneficial uses (Table 1 of the 1995
18 Plan)? This location is at the entrance to the Contra Costa Canal at Pumping Plant
No. 1. How should the location be modified and what are the scientific and legal
arguments in support of and against such a modification?

19 Should the SWRCB adopt new water quality objectives for the municipal and
20 industrial beneficial uses (Table 1 of the 1995 Plan) for constituents such as
21 bromides and total organic carbons or other precursors of disinfection byproducts?
What are the scientific and legal arguments in support of and against the adoption
of such objectives?

22 2. The Only Change The SWRCB Should Make To The Water Quality
23 Objectives For Municipal And Industrial Beneficial Uses Is How The
Objective Is Measured

24 As the Authority explained in its Memorandum Supplementing Information and Providing
25 Additional Comments on the Chloride Objectives, Compliance Location at Contra Costa Canal at
26 Pumping Plant No. 1, and Potential New Objectives, the only amendments the SWRCB should
27 make to the objectives for municipal and industrial beneficial uses is the addition of a compliance
28 location. The SWRCB should neither (1) change the value or description of the 150 mg/l chloride

1 objective in the water quality objectives for municipal and industrial beneficial uses, nor (2) adopt
2 new water quality objectives for the municipal and industrial beneficial uses for constituents such
3 as bromides and total organic carbons or other precursors of disinfection byproducts.

4 a. The SWRCB Was Presented With Information That Support An
5 Additional Compliance Location In The Water Quality Objectives
6 For The Municipal And Industrial Beneficial Uses

7 The parties presented undisputed requests and information in support for an additional
8 compliance location. Interior, DWR, and CCWD each requests that the Water Board establish an
9 additional compliance point in Old River, near Holland Tract. The changes are needed to provide
10 Reclamation and DWR with a point to which they can operate the CVP and SWP, respectively, to
11 achieve the mandated chloride levels.

12 b. Parameters Should Be Set To Control When (1) The Compliance
13 Location Changes From The Existing Location To A New Location
14 And (2) The Objectives That Should Exist At That New
15 Compliance Point

16 The compliance location should change from the existing location at Pumping Plant No. 1
17 to the new location in Old River, near Holland Tract when the three-day pumping average at
18 Pumping Plant No. 1 falls below 125 cfs and the objective at that location is not being achieved.
19 That rate should be used because when Pumping Plant No. 1 operates at that level there is a
20 strong correlation between water quality in Old River, near Holland Tract and water quality at
21 Pumping Plant No. 1. (See attachments 5 and 6 to DWR-EXH-13, CCWD-EXH-07.) Finally, if
22 the Water Board designates a compliance point in Old River, near Holland Tract, the Water Board
23 should set the objective at 1.0 mS/cm when the 250 mg/L chloride objective and 0.7 mS/cm when
24 the 150 mg/L chloride objective would have otherwise controlled.²⁸ (See attachment 8 to DWR-
25 EXH-13.)

26 ²⁸ If accepted by the Water Board, a day would count towards the 150 mg/L objective if (1)
27 CCWD is pumping at Pumping Plant No. 1 below 125 cfs (70 cfs if accepting the
28 recommendation of Reclamation and DWR or 20 cfs if accepting the recommendation of
CCWD), (2) the water quality at Pumping Plant No. 1 is below 150 mg/L, and (3) the electric
conductivity in Old River, near Holland Tract is at or below 0.7 mS/cm (0.56 mS/cm if accepting
the recommendation of CCDW).

1 c. The SWRCB Has Not Been Presented With Any Information To
2 Support The Adoption Of A New Water Quality Objective For The
3 Municipal And Industrial Beneficial Uses For Constituents Such As
4 Bromides And Total Organic Carbons Or Other Precursors Of
5 Disinfection By-Products

6 Various parties, including CCWD, the California Urban Water Agencies (CUWA), DWR,
7 and Reclamation have discussed the potential for adopting specific water quality objectives for
8 bromide and total organic carbon. However, only CCWD has suggested if not recommended that
9 the Water Board include a specific water quality objective of 50 µg/l of bromide and 3.0 mg/L of
10 total organic carbon, as measured at Clifton Court Forebay and other Southern Delta drinking
11 water intakes. Such objectives are infeasible with existing facilities, and even if the CVP, SWP
12 and other project could operate to meet such objectives, use of water for that purpose would be a
13 waste. Moreover, and possibly more important, to protect beneficial uses, there is no need to
14 include in an amended or a revised water quality control plan a discussion of the efforts to
15 improve the level of bromide or total organic carbons in Delta waters. Such a discussion will
16 provide nothing except for confusion. In particular, the Authority is concerned that such a
17 discussion could be improperly used to support a claim that a "narrative" objective exists. The
18 existing objectives protect water quality for municipal and industrial uses. The CALFED
19 program should maintain the role of improving water quality, beyond the protections afforded to
20 municipal and industrial uses under the 1995 WQCP.

21 F. River Flows – San Joaquin River: February – April 14 and May 16 – June:
22 Program of Implementation

23 1. Summary of Issues

24 The Revised Notice presented the issues as follows:

25 Should the SWRCB amend the flow objectives for the San Joaquin River at
26 Airport Way Bridge, Vernalis, for February through April 14 and May 16 through
27 June and the water quality objectives for fish and wildlife life beneficial uses
28 (Table 3 of the 1995 Plan)? How should the objectives be modified and what are
the scientific and legal arguments in support of and against modification?

Should the SWRCB change the methodology for determining the applicable San
Joaquin River flow objectives that currently are determined by reference to the
required Delta outflow objective? How should the methodology for determining
required flows be modified and what are the scientific and legal arguments in
support of and against modification?

1 Should the SWRCB amend the Program of Implementation for the 1995 Plan to
2 account for changes in the regulatory environment and existing law or recent
3 actions taken to improve habitat and meet water quality objectives? What
4 modifications should the SWRCB make to the Program of Implementation, and
5 what are the scientific and legal arguments in support of and against such
6 modifications?

7 For each of the amendments that a party proposes that the SWRCV make to Tables
8 1,2, 3, 4 of the 1995 Plan, how should the Program of Implementation be updated
9 and what are the scientific and legal arguments in support of and against such
10 modifications?

11 2. The Water Board Must Deny TBI's Request To Link Maximum Delta
12 Export Rates To Flow Levels At Vernalis

13 TBI suggests that the flow objective based, in part, on a criterion that:

14 Required flow levels should be linked to maximum Delta export rates to provide
15 an average Vernalis flow: export ratio for the March-June period that is greater
16 than or equal to 1.0.

17 (BAY EXH 8, p. 9) That suggestion is made without any serious consideration of the need for
18 such a criterion to protect fish or the impacts of the criterion on other beneficial uses.
19 Presumably, the suggestion is made in that manner because when one considers the effect the
20 suggestion has on beneficial uses, it is beyond reasonable debate that the suggestion must not be
21 accepted.

22 TBI recommends limiting exports by using the ratio of river flow at Vernalis to exports.
23 The Authority notes that there is no justification other than historical precedence for using such a
24 ratio as a basis for limiting exports. No reasonable person would expect the same conditions to
25 prevail for river flow and exports of 7,000 cfs (a ratio of 1:1) and a river flow and exports of
26 1,500 cfs (also a ratio of 1:1). There is no reason to link river flow and exports by use of a ratio.
27 These two factors can easily be delinked in any analysis of effects of each (using, for example,
28 multiple regression analysis).

This is especially true now that there are several years of completed VAMP experiments
and, those data, in combination with data from previous years, have shown that there is no
correlation between smolt survival and exports. On the other hand, there is a correlation between
survival and river flow. In other words, survival is associated with river flow (in the statistical
sense) but not with exports. So, if river flow is divided by exports, this ratio may show (and, in

1 fact, does show) a correlation with survival. This does not mean that exports are associated with
2 survival any more than a correlation of survival with the ratio of river flow to the springtime
3 NASDAQ average would mean that NASDAQ was affecting survival. As for TBI's limits on
4 exports, the Authority recalls the above discussion on exports.²⁹

5 As discussed above, yet again TBI makes a suggestion - to link CVP and SWP pumping
6 to Vernalis flows - without any consideration of water supply impacts. If accepted, in addition to
7 the limited, if any, biological protection the suggestion would cause, the linkage proposed would
8 have significant impacts on water supplies. A cursory calculation of potential impacts of TBI's
9 suggestion indicates that impacts to CVP and SWP water supplies could be more than 500,00
10 acre-feet of water in a given year. Because a reasonable level of protection will be afforded fish
11 even if the suggestion is not accepted, and because the suggestion by TBI has the potential to
12 cause significant adverse impacts to other beneficial uses, it must be denied.

13 3. The Water Board Must Reject The Proposal By Deltakeeper To Utilize The
14 Periodic Review To Mandate Massive Land Retirement And Rewrite
Water Rights Permits For The Central Valley Project

15 Under the guise of the River Flows and Program of Implementation issues, Deltakeeper
16 proposes that the use of water in the San Luis Unit of the CVP and other areas on the Westside of
17 the San Joaquin Valley should be curtailed through sweeping retirement of all potentially
18 drainage-impaired lands, and that any resulting water "savings" should be sent through the Cross
19 Valley Canal to serve water users in the Friant-Kern Canal service area. (DK - EXH - 24.)
20 According to Deltakeeper, these changes would allow for more water to be released from Friant
21 Dam into the San Joaquin River for water quality purposes. (*Id.*) Deltakeeper would have the
22 Water Board utilize the periodic review to re-write not only CVP water rights permits, but the
23 very purposes and operations of the CVP, all without consideration of the enormous policy and
24 legal issues involved. Further, this bold proposal to gut huge areas of the CVP and the farm
25 economy of the State is based upon inaccurate and often misleading characterizations of ongoing

26
27 ²⁹ Even if there were a benefit to fish, that benefit could be achieved through the installation of a
28 permanent barrier at the Head of Old River; a facility that removes any "link" between the CVP
and SWP pumps and the San Joaquin River.

1 efforts to resolve Westside drainage problems. It is beyond the scope of this periodic review, and
2 the Water Board should reject Deltakeeper's proposal outright.

3 a. Drainage Is Not A Precondition To CVP Deliveries To The San
4 Luis Unit

5 On behalf of Deltakeeper, Tom Stokely of the Trinity County Planning Department stated
6 that the San Luis Act, (PL 86-488, 74 Stat. 156), requires that drainage be provided before water
7 can be delivered to lands within the San Luis Unit. (DK - EXH - 24.) This interpretation has
8 been rejected by the federal District Court in *Firebaugh Canal Company and Central California*
9 *Irrigation District v. United States*, CIV-F-91-048 OWW (consolidated with CIV-F-88-634-022),
10 where Judge Wanger expressly held that the San Luis Act does not require drainage as a
11 precondition to delivery of water to the San Luis Unit.³⁰

12 b. Deltakeeper Misstates D-1641

13 Deltakeeper cites portions of Water Board Decision 1641 ("D-1641") to support
14 Deltakeeper's argument that the irrigation of lands in the San Luis Unit causes the San Joaquin
15 River salinity problems. (DK - EXH - 24.) In D-1641, the Water Board concluded "that the
16 actions of the CVP are the principal cause of the salinity concentrations exceeding the objectives
17 at Vernalis." (D-1641 at 83.) However, the Water Board did not attempt to determine the
18 relative contributions of saline discharges from irrigated agriculture in and around the San Luis

19
20 ³⁰ Deltakeeper's assertion misinterprets the San Luis Act. Section 1(a) of the Act provides in
21 part that construction of the San Luis Unit could not commence until either the Secretary of the
22 Interior "received satisfactory assurance from the State of California that it will make provision
23 for a master drainage outlet and disposal channel" pursuant to the California Water Plan (Bulletin
24 No. 3), or the Secretary "has made provision for constructing the San Luis interceptor drain" as
25 described in the December 17, 1956 report entitled "San Luis Unit, Central Valley Project." (San
26 Luis Act §1(a).) After the San Luis Act was passed, the State of California provided the
27 necessary assurance to Interior that it would construct a master drainage outlet. Based on this
28 assurance, Interior began construction of the water delivery components of the San Luis Unit.
Not long thereafter, however, the State reversed its decision, and Interior decided to construct the
San Luis Drain on its own. As the Ninth Circuit concluded in *Firebaugh Canal Co. v. United*
States, 203 F.3d 568, 578 (9th Cir. 2000), when Interior decided to construct the rest of the San
Luis Unit, it assumed the ultimate responsibility to provide for the necessary drainage, for which
it is currently conducting the environmental review process. However, as Judge Wanger has
ruled, that responsibility does not prevent Interior from delivering CVP water to the San Luis
Unit before drainage is provided.

1 Unit, and from low flows in the river due to diversions at Friant dam. Instead, the Water Board
2 merely noted that the Vernalis salinity problems are the result of some combination of saline
3 discharges and low flows. (*Id.*) Further, information developed since the Water Board workshop
4 on salinity provided by the San Joaquin River Water Quality Management Group in conjunction
5 with Reclamation, DWR and others indicates that the Vernalis objective is currently being met
6 and that ongoing existing programs are likely to assure that objectives will be met in all water
7 year types. As pointed out by Deltakeeper, in D-1641, the Water Board notes that the drainage
8 problems exist in and around the San Luis Unit. In addition, the Water Board notes that some
9 parties argue that the drainage problems close to the river are exacerbated by the application of
10 water to "upslope" lands farther away. (D-1641 at 82.) However, the Water Board did not make
11 any express findings on these matters, and the question of the relative contributions of "upslope"
12 and "downslope" lands remains disputed, is highly controversial and has not been determined
13 either by the Water Board or in pending litigation. *Firebaugh Canal Co. and Central California*
14 *Irrigation District v. United States, CIV-F-91-048 OWW* (consolidated with *CIV-F-88-634-022*).

15 c. Delta-Keeper's Massive Land Retirement Proposal Is Not
16 Supported By Factual Evidence

17 Deltakeeper states that the proposed drainage options for the San Luis Drainage Feature
18 Re-Evaluation do not include land retirement as a potential component. (DK - EXH - 24.)
19 While it is true that Interior's December 2002 Plan Formulation Report did not include land
20 retirement as a drainage option, Interior's February 2004 *Amended Plan of Action* announced that
21 it would "begin formulating and evaluating [drainage] alternatives that include land retirement."
22 (Amended Plan at 1.)³¹ Interior's decision to include land retirement in the Feature Re-evaluation
23 process arose largely from the work done by water districts within and surrounding the San Luis
24 Unit in developing the May 2003 "Westside Regional Drainage Plan," which included land
25 retirement as a key component in certain areas. (*Id.*)

26 Interior published a Scoping Report and an Addendum to the Plan Formulation Report in

27 ³¹ For information on Reclamation's efforts regarding San Luis drainage, including those
28 reflected in documents cited herein, see www.usbr.gov/mp/sccaosld/index.html.

1 July 2004. According to Interior's 2004 Addendum to the Plan Formulation Report, land
2 retirement will be examined as a component of the ultimate drainage solution, but not necessarily
3 as the only component. (Addendum at E-2.) The Plan Formulation Report identified four other
4 alternatives, including completion of one of two possible drains north to the Delta, a drain west to
5 the ocean, and an in-valley disposal alternative. (*Id.*) The in-valley disposal alternative is also
6 being developed in the Westside Regional Drainage Plan. Interior has not yet completed the
7 environmental analysis of these options, but it is almost certain that a combination of alternatives,
8 including some amount of land retirement, will be adopted to provide drainage service to
9 drainage-impaired lands.³² It is therefore factually incorrect to assert that Reclamation is not
10 considering any land retirement alternative, and it is premature to summarily require retirement of
11 all drainage-impacted land.

12 Additionally, Deltakeeper cites inconsistent figures and appears to overestimate the
13 number of acres that require drainage service in the region. At one point in their presentation,
14 Deltakeeper cites a report from the early 1990's which concluded that, by 2050, approximately
15 950,000 acres would need drainage service. (DK - EXH - 24.) Later in their presentation, while
16 citing the Draft Trinity River Fishery Restoration Supplemental Environmental Impact Report,
17 Deltakeeper notes that approximately 376,751 acres require drainage service in the region served
18 by the Delta-Mendota Canal. (*Id.*) These numbers are significantly higher than the calculations
19 made by Interior in the 2004 Plan Formulation Report Addendum, which are also now outdated
20 by various voluntary land retirement decisions and alternative drainage management techniques.

21 d. Deltakeeper's Proposal To Prohibit Water Deliveries To Drainage
22 Impacted Lands Is Draconian And Unjustifiable

23 A key element of Deltakeeper's land retirement proposal is that water deliveries to
24 districts (those in and near the San Luis Unit) must be reduced by the percentage of any particular
25

26 ³² Interior released its Draft Environmental Impact Statement for the San Luis Drainage Feature
27 Re-evaluation for public review on June 2, 2005. (70 Fed. Reg. 32370-32371.) Although the
28 Authority did not have an opportunity to fully review the Draft EIS prior to submitting these
comments, it appears that Interior has included land retirement as a component in each of the
alternatives analyzed therein.

1 district's lands that require drainage service. (DK - EXH - 24.) Deltakeeper's idea is that if one-
2 half of a district's lands require drainage service, all of those lands should be retired. (*See id.*) If
3 all of a district's lands require drainage service, Deltakeeper proposes to retire the entire district.
4 (*Id.*)

5 Deltakeeper provides no factual support to justify its simplistic proposal to seize the
6 lifeblood of a huge farming area. Reclamation is completing the process for drainage service, and
7 drainage service is currently being provided through local programs, including the Grassland
8 Bypass Project. As described elsewhere in these comments, the economy of the Westside region
9 is heavily dependent on CVP water supplies for irrigation. The actual supply is scant; in many
10 cases less than 2.5 acre-feet of water per acre. Further, even in wet years, most districts in the
11 region do not receive their full CVP contract delivery amounts due to legal and regulatory
12 constraints unrelated to the drainage issue. Thus, growers rely on fallowing of some land or on
13 regional transfers of CVP water to accumulate sufficient water for their crops. Mandating
14 retirement of specified acres and stripping the water from retired lands or mandating its transfer to
15 certain favored regions therefore will compound an already inadequate regional water supply,
16 endangering the economic viability of the unretired lands on top of the lost productivity from
17 ground that will likely be retired under Reclamation's alternatives for drainage service and
18 ongoing supply adjustments.

19 Finally, given the continued shortage of water south of the Delta, land management of
20 areas identified as drainage impacted is changing. For example, some districts have assigned
21 their CVP supplies to other water-short areas and are managed by dry farming, developed into
22 habitat areas, or utilized for alternate cropping for drainage reuse. In sum, the Authority urges the
23 Water Board not to reject Deltakeeper's effort to effect broad public policy changes like
24 mandating land retirement, regardless of progress towards resolving any water quality impacts
25 from drainage discharges.

26 e. Deltakeeper's Proposal To Transfer Westside Water To The
27 Eastside Is Beyond The Scope Of This Periodic Review And
Ignores Numerous Technical And Legal Obstacles

28 The crux of Deltakeeper's proposal is that the water "savings" realized by reducing CVP

1 contract deliveries can and should be sent through the Cross Valley Canal to supplement the
2 supplies of lands served by the Friant-Kern Canal, so that more Friant water can be released to the
3 San Joaquin River for water quality purposes. (DK - EXH - 24.) Deltakeeper offers no evidence
4 that such a scheme is technically feasible, that enough water could ever be "saved" through
5 Westside land retirement to justify reduced Friant deliveries to Friant-Kern Canal water users,
6 that such reallocation would result in increased releases from Friant Dam, or even whether such
7 releases, if made, would in result in meeting San Joaquin River and Southern Delta water quality
8 objectives for salinity and other constituents.

9 Even more outrageously, Deltakeeper ignores the public policy implications of simply
10 putting hundreds of thousands of acres of productive farmland—with its workers, owners, local
11 communities, dependent businesses, supported counties—out of business with no public review,
12 no balancing, no consideration of environmental impacts. It also ignores numerous legal issues,
13 including those relating to the federal preemption, appropriate scope of the periodic review, the
14 statutory and constitutional requirements for alteration of water rights permits, and federal
15 statutory authorities controlling authorization, cost-recovery, contracting and operational
16 requirements for the CVP. For all of the reasons stated above, the Water Board must reject the
17 Deltakeeper proposal.

18 **G. Dissolved Oxygen**

19 Deltakeepers, through numerous submissions, (*see, e.g.,* DK - EXH - 2-4, 8-15,) suggest
20 that action must be taken on the Dissolved Oxygen ("DO") objective to protect beneficial use for
21 fish and wildlife. Notwithstanding disagreements the Authority may have on substantive
22 grounds, the information is outside of the scope of the workshop and must therefore be dismissed.

23 In its September 8, 2004 letter to the Water Board regarding the Draft Staff Report for the
24 Periodic Review of the 1995 Water Quality Control Plan, South Delta Water Agency commented
25 that implementation of the DO objective contained in the 1995 Plan should be amended. Central
26 Delta Water Agency in its September 7, 2004 letter to the Water Board on the same subject
27 makes a similar suggestion.

28 The Staff Report responded to those comments and concluded: "No parties presented

1 information suggesting that the DO objective should be changed." (Staff Report at p. 37.) The
2 Staff Report explained:

3 Both SDWA's and CDWA's comments address potential changes to the
4 implementation of the DO objective. Currently, the CVRWQCB is in the process
5 of considering the adoption of a proposed TMDL intended to implement the
6 existing DO objective. Once any TMDL is adopted by the CVRWQCB, the
7 TMDL must then be approved by the SWRCB. Therefore, staff concludes that a
8 review of the DO objective or the implementation recommendations during the
9 current periodic review process would be duplicative of the existing TDML
process and premature at this time. Accordingly, staff recommends that the DO
objective not be reviewed during the current periodic review. If additional
information regarding the DO objective or its implementation is developed in the
future, the SWRCB may address this information in future water right or water
quality proceedings.

10 (*Id.*) Through Resolution 2004 - 0062, the Water Board adopted the staff's recommendation.
11 For that reason, the issue of what changes, if any, should be made to the DO objective is not
12 before the Water Board. The information presented on that issue must be dismissed.

13 **IV. CONCLUSION**

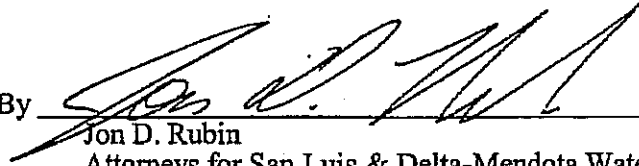
14 For the reasons stated in the oral presentations made and all of the written materials
15 submitted on behalf of the Authority, the Authority respectfully requests that the Water Board
16 allow, at times, for flexibility in the outflow, export and possibly Rio Vista objectives and adopt
17 the process for flexing presented in this memorandum. Such a process should facilitate more
18 efficient use of California water resources while maintaining a reasonable level of protection for
19 the beneficial uses of Bay-Delta waters. No other changes should be made to those objectives.
20 Specifically, no information was presented that would support making more restrictive the
21 outflow or export objectives.

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1 The Authority also respectfully requests that the Water Board add a compliance point in
2 Old River, near Holland Tract. Presuming Reclamation and DWR will remain responsible, at
3 least in part, for achieving the salinity objective, the additional compliance point is needed to
4 provide Reclamation and DWR with a point to which they can operate the CVP and SWP,
5 respectively, to achieve the mandated chloride levels.

6 Dated: June 3, 2005

7 KRONICK, MOSKOVITZ, TIEDEMANN & GIRARD
8 A Professional Corporation

9
10 By 
11 Jon D. Rubin
12 Attorneys for San Luis & Delta-Mendota Water
13 Authority

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