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[LETTERHEAD]

Thomas Howard
Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, California 95812

RE: Comprehensive Review of the Bay-Delta Water Quality Control Plan

Dear Mr. Howard:

Thank you for taking initial steps toward restoring aquatic life protection in the San Francisco Bay/San Joaquin-Sacramento River Delta (Bay Delta Estuary) by completing a series of workshops focused on biological and technical issues relevant to the ongoing comprehensive review of the 2006 Water Quality Control Plan (Bay-Delta WQCP). The U.S. Environmental Protection Agency (EPA) provided written and verbal comments during the State Water Quality Control Board's (State Board's) workshops.[1] The State Board focused the comprehensive review of the 2006 Bay-Delta WQCP on evaluating the impact of insufficient freshwater flows as one of the multiple stressors contributing to the long-term decline and recently plummeting fish populations in the estuary.[2] After reviewing the presentations and submissions, we have additional comments to provide and recommendations to reinforce. Please consider this feedback as the State Board moves forward expeditiously with its review.

**1. Focus on Flows**

Freshwater flows need to be addressed now as one of many actions necessary for restoring aquatic life beneficial uses in the Bay Delta Estuary.[3] The State Water Board[4] and California Department of Fish and Game[5] have already noted that existing freshwater flows into and through the estuary are inadequate to protect aquatic public trust resources in the Bay Delta.[6] Increased freshwater flows, supplemented with physical habitat restoration, are both essential for protecting valued resident and migratory aquatic species, habitats, and ecosystem processes. Both of these elements are necessary for improved protection of public trust resources; "one cannot substitute for the other."[7] The State Board has the unique authority and responsibility to provide for increased freshwater flows that improve water quality and aquatic habitat.

EPA fully appreciates that recent and historical adverse impacts to the Bay Delta Estuary's aquatic resources are the result of many stressors.[8] During the development of EPA's Action Plan, EPA examined the scientific status of, and regulatory response to, the most frequently identified of these multiple stressors (ammonia, mercury, selenium, salinity, pesticides, inadequate estuarine habitat and migratory corridors, and contaminants of emerging concern). The Action Plan summarizes the regulatory response from the State and Regional Boards, EPA, and/or other agencies responsible for affected programs. Although the Action Plan concludes that the Clean Water Act programs, taken as a whole, are not protecting the beneficial uses of the Bay Delta Estuary, it also concludes that the State and Regional Boards have initiated work on the most significant stressors. These actions have reduced the impact of important contaminants (ammonia, selenium, sediment, mercury, low dissolved oxygen, pesticides) by updating wastewater treatment and storm water permits, adopting and implementing Total Maximum Daily Loads (TMDLs), achieving water quality targets in TMDLs, and monitoring and reducing non-



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point source contaminants through waste discharge requirements under state water quality law.

Although the response to multiple stressors is necessarily divided by the varied responsibilities of the State and Regional Boards, the State Board has used the Strategic Workplan process to assure that the combined response is comprehensive and coordinated. As a part of this comprehensive response, the State Board chose to focus this current effort on evaluating the flow component of the multiple stressors.[9] EPA supports this focus for the State Board's current proceedings. Although flows are not the only stressor, the current scientific understanding of the Bay Delta Estuary indicates that the flow regime is one very important stressor, and one that affects other aquatic conditions such as turbidity, salinity, contaminant loadings or temperature. Assessing flows and making comprehensive decisions for protecting all of the beneficial uses of the Bay Delta Estuary are functions that are – under California's system - uniquely assigned to the State Board.

## 2. Recommendations

EPA is summarizing recommendations made at the second State Board workshop for measures to evaluate as modifications or additions to the Bay-Delta WQCP. These recommendations are intended to improve the quantity and quality of the low salinity zone, provide continuous migration corridors for migratory fishes, and provide a salinity gradient from the Delta through the Bay to the Pacific Ocean that supports the habitat requirements of freshwater, low salinity zone, and bay fishes that use these open water habitats. These recommendations also support the State Board in their effort to evaluate a range of freshwater flows that mimic the natural hydrograph, protect aquatic species with life histories adapted to this freshwater flow pattern, and provide water for municipal, agricultural, commercial, recreation, and other beneficial uses.

- Activate Delta outflow objectives with first major flood event of the wet season, or January 1, whichever comes first. This modification is intended to provide freshwater flows and water quality that support smelt and salmon migration, estuarine habitat, and improved ecosystem function.
- Modify the existing Delta springtime outflow objective by eliminating the Roe Island trigger. This modification is intended to adjust freshwater flows so that they more closely mimic the pattern of the natural hydrograph. This change is intended to protect the benefits of high flow conditions needed to increase fish populations, improve ecosystem function, estuarine habitat protection, fish spawning and growth, and larval fish transport by linking several ecological functions of the natural hydrograph to the function of the low-salinity zone.
- Identify September and October Delta outflow objectives for wetter years. Fall freshwater flows should be identified using a reference period (times of increasing and considerably higher fish populations). The trigger should be an indicator of basin natural hydrology, such as spring reservoir storage. This objective should protect fall estuarine habitat and salmon spawning by protecting the quantity and quality of the low salinity zone and the cold water pool.
- Require freshwater pulse flows from the San Joaquin and Mokelumne Rivers to reach the Bay for a minimum of 2 weeks, longer following wetter springs in the San Joaquin watershed, to a maximum of 6 weeks. This objective is intended to improve adult salmon migration and successful spawning by providing a continuous corridor of natural chemical cues to natal streams.

EPA is working closely with state and federal fish and wildlife agencies to assure that our proposals are consistent with recommendations by those individual agencies. We are including as Attachment 1 a copy of the summary recommendations from each of these agencies provided to the State Board at the second workshop.



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### 3. "Protective Experiments" as Criteria

The State Board sought input on adopting scientific "experiments" as part of the revised Bay-Delta Plan during the recent workshops, so that future regulatory provisions could take advantage of the scientific information derived from those experiments. The federal Clean Water Act and state Porter-Cologne Act include a built-in mechanism, the triennial or periodic review, for revising water quality regulatory provisions to respond to new scientific information. Although these provisions enable "adaptive management" generally, EPA supports the idea of the State Board's adoption of more explicit scientific experiments in the regulatory process. These experiments would need to be scientifically constructed and not likely to adversely impact the aquatic resources being targeted for protection. An example of this approach was the Vernalis Adaptive Management Plan (VAMP) adopted during the mid-1990s with the State Board's active participation. The VAMP has had mixed reviews, primarily because it did not ultimately collect data from all the water years called for in the experimental design. Nevertheless, the VAMP confirms that a carefully constructed real-time, large-scale scientific experiment can be developed and implemented under the present regulatory framework. Ensuring the appropriate funding and water availability are essential for avoiding adverse impacts to aquatic resources during experimental freshwater flows.

### 4. Moving Away from "Advocacy" Science

We, as well as the independent science panel, observed a trend towards "advocacy" science in the workshop stakeholder presentations. This is unfortunate but not surprising given the history of water management in California, the resources at issue and the external litigation environment. Nevertheless, it complicates the State Board's task of developing a solid scientific and technical basis for its decisions.

We have two suggestions. First, the State Board has received valuable input from the independent science panels. Focused reviews by these independent panels can help guide the State Board through the competing presentations, differentiating requirements for protecting beneficial uses from stakeholder preferences. EPA recognizes the expense and time associated with these panels, but we think the value added is immense. On the other hand, we discourage inviting further delay with additional preliminary informational workshops.

Second, during the multiparty agency and stakeholder discussions on water management during the 1990's, the interested parties participated in several "gaming" exercises, in which the modelers, biologists, and stakeholders worked through multiple year operational scenarios in an interactive simulation. We believe that these gaming exercises allowed all participants to identify real problems and opportunities in managing the system for the protection of multiple beneficial uses. A similar set of gaming exercises might be useful in evaluating the State Board's alternatives for freshwater flow objectives.

### 5. The Need to Act

Our most important comment is that the State Board needs to move expeditiously to adopt and implement a revised Bay-Delta Plan that provides freshwater flow improvements needed to protect beneficial uses. It is essential to use the technical information we have today and move forward now. Regulatory agencies are frequently required to make decisions in the absence of stakeholder unanimity and complete scientific information. The Bay Delta Estuary is a "well studied estuary"[10] with an enviable decades-long monitoring program. We agree with the Independent Science Panel that there is no reason to expect that further delay will enable some special scientific breakthrough.[11] Given the significant time associated with making the physical changes to habitat and conveyance envisioned in the BDCP, this State Board action is critical for near and long-term progress in protecting the most sensitive beneficial uses and the State's coequal goals of ecosystem restoration and water supply reliability.[12]



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EPA looks forward to working with the State Board as it completes its review and revises and implements the Water Quality Control Plan.

Sincerely,

Karen Schwinn
Associate Director
Water Division

Enclosure: Appendix , Summary of Agency Recommendations from Workshop 2

Cc: Jeanine Townsend, Clerk of the Board



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[1] *Available at* http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/comp_review.shtml

[2] "Specifically, the State Water Board seeks input and information to support whether the water quality objectives and associated program of implementation discussed above should be modified or whether they should remain the same. In particular, the State Water Board seeks input and information to support whether Delta outflows, Delta inflows, and water project operational constraints should be increased, decreased, or remain the same." STATE WATER RESOURCES CONTROL BOARD, SUPPLEMENTAL NOTICE OF PREPARATION AND NOTICE OF SCOPING MEETING FOR ENVIRONMENTAL DOCUMENTATION FOR THE UPDATE AND IMPLEMENTATION OF THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY: COMPREHENSIVE REVIEW (January 24, 2012) at p. 4.

[3] STATE WATER RES. CONTROL BD., DEVELOPMENT OF FLOW CRITERIA FOR THE SACRAMENTO-SAN JOAQUIN DELTA ECOSYSTEM PREPARED PURSUANT TO THE SACRAMENTO-SAN JOAQUIN DELTA REFORM ACT OF 2009 (August 3, 2010) available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf and U.S. ENVTL. PROT .AGENCY, WATER QUALITY CHALLENGES IN THE SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY: EPA'S ACTION PLAN (August 2012), available at http://www.epa.gov/sfbay-delta/pdfs/EPA-bayareaactionplan.pdf.

[4] "The best available science suggests that current flows are insufficient to protect public trust resources." Page 2 and "The public trust resources that are the subject of this proceeding include those resources affected by flow, namely, native and valued resident and migratory aquatic species, habitats, and ecosystem processes." Page 10 in STATE WATER RES. CONTROL BD., DEVELOPMENT OF FLOW CRITERIA FOR THE SACRAMENTO-SAN JOAQUIN DELTA ECOSYSTEM PREPARED PURSUANT TO THE SACRAMENTO-SAN JOAQUIN DELTA REFORM ACT OF 2009 (August 3, 2010) available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf.

[5] "…current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Page in CAL. DEPT. OF FISH AND GAME, QUANTIFIABLE BIOLOGICAL OBJECTIVES AND FLOW CRITERIA FOR AQUATIC AND TERRESTRIAL SPECIES OF CONCERN DEPENDENT ON THE DELTA (November 23, 2010), available at http://www.dfg.ca.gov/water/water_rights_docs.html

[6] EPA's recently-released Action Plan reaches a similar conclusion. EPA examined the impact of flows on the location, size, and characteristics of the low salinity zone – the estuarine habitat - in the Bay Delta Estuary, and concluded that the current flow regime has had a significant adverse impact on that estuarine habitat. *See* U.S. ENVTL. PROT. AGENCY, WATER QUALITY CHALLENGES IN THE SAN FRANCISCO BAY/SACRAMENTO-SAN JOAQUIN DELTA ESTUARY: EPA'S ACTION PLAN (August 2012), available at http://www.epa.gov/sfbay-delta/pdfs/EPA-bayareaactionplan.pdf.

[7] STATE WATER RES. CONTROL BD., DEVELOPMENT OF FLOW CRITERIA FOR THE SACRAMENTO-SAN JOAQUIN DELTA ECOSYSTEM PREPARED PURSUANT TO THE SACRAMENTO-SAN JOAQUIN DELTA REFORM ACT OF 2009 (August 3, 2010) available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

[8] "Current research findings do not support the idea that a "single stressor" is responsible for the ecological changes in the Bay Delta Estuary. Most research supports the idea of multiple stressors, interacting in concert, as the cause of the Bay Delta Estuary ecosystem decline." U.S. ENVTL. PROT.AGENCY, WATER QUALITY CHALLENGES IN THE SAN FRANCISCO BAY/SACRAMENTO –SAN JOAQUIN DELTA ESTUARY, 76 Fed. Reg. 9709 (Feb. 22, 2011) (ANPR), at p. 10 (cites omitted). The unabridged version of this notice is available at http://www.epa.gov/sfbay-delta/pdfs/BayDeltaANPR-fr_unabridged.pdf .

[9] "Specifically, the State Water Board seeks input and information to support whether the water quality objectives and associated program of implementation discussed above should be modified or whether they should remain the same. In particular, the State Water Board seeks input and information to support whether Delta outflows, Delta inflows, and water project operational constraints should be increased, decreased, or remain the same." STATE

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[10] Cloern, J.E., and A.D. Jassby. 2002. Drivers of Change in Estuarine-Coastal Ecosystems: Discoveries from Four Decades of Study in San Francisco Bay. *Reviews of Geophysics,* Vol. 50, RG4001 (October 24, 2012), at p. 2. *Available at* http://www.agu.org/pubs/crossref/2012/2012RG000397.shtml.

[11] "Rather than waiting for the promise of the next version of analyses or the next generation of models (in the hope that the next analysis or model will be a "break-through"), we urge the Board to proceed with revising water quality objectives based on tools that are available now or truly imminent. Specifically, it is not clear how much improvement in accuracy and precision will be provided by new 2-dimensional and 3-dimensional hydrodynamic models." STATE WATER RESOURCES CONTROL BOARD, BAY-DELTA INDEPENDENT SCIENCE PANEL #2: FISHERY RESOURCES (09/17/12) at page 3.

[12] [Cite to DSC and State law on need for board to act]



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