

1. U.S. Environmental Protection Agency, Region IX (USEPA)

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Letter Date: 7 April 2010

USEPA Comment #1.

Thank you for the opportunity to comment on the proposed Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary, and the accompanying Draft Staff Report, both dated February 2010, and the Draft Staff Report for the Sacramento-San Joaquin Delta Estuary TMDL for Methylmercury, dated February, 2010. We previously reviewed and commented on an earlier version of these documents dated February, 2008. As before, we urge the Central Valley Regional Water Quality Control Board (Regional Board) to adopt the new water quality objectives and TMDLs, with changes as discussed below. Our comments and concerns on the proposed amendments are summarized below, and detailed comments are included in the attachment.

As before, we continue to strongly support your decision to complete TMDLs for methylmercury in the Delta Estuary. These TMDLs use the best available science, and focus on controlling both methylmercury, which is directly linked to methylmercury fish tissue levels, and total mercury, which is a limiting factor in the production of methylmercury. The science supporting these TMDLs clearly indicates that controlling both methylmercury and total mercury will more effectively reduce fish tissue values to safe levels for both wildlife and Delta anglers.

We are concerned the proposed Basin Plan Amendment (BPA) contains TMDLs for the Delta, as currently presented, that are not considered complete under the Clean Water Act (CWA). Specifically, we note the BPA contemplates that Phase 2, implementation of control actions, will begin after stakeholder completion of Phase 1, development of Control Studies. However, language in the proposed BPA indicates that control actions for compliance with allocations is *only* required after formal Board review and action on Phase 1, and Board development of tributary TMDLs. We find these TMDLs to be incomplete if such Regional Board action is required to either confirm or amend the proposed TMDLs for the Delta, and to confirm development of tributary TMDLs. The BPA must be revised to say that Phase 2 control actions will be implemented when appropriate Phase 1 studies have been completed.

Response: Staff made edits to the draft Basin Plan Amendment language to address USEPA's comments in order to ensure that the Delta TMDLs would be considered complete under the CWA section 303. Please refer to staff's detailed responses to USEPA's comments provided in the attachment to their letter.

USEPA Comment #2.

The proposed BPA contemplates that compliance schedules for NPDES dischargers will only start at the beginning of Phase 2, after the Board completes a review of the Phase 1 Control Studies. However, this intent is inconsistent with EPA regulations concerning compliance schedules at 40 CFR 122.47 and the State Water Resources Control Board's (State Board's)

2008 Policy for Compliance Schedules in NPDES Permits. Language referring to beginning a compliance schedule in Phase 2 must be deleted. We suggest modifying the BPA to include language stating that when the Phase 1 study is complete, the need to continue a compliance schedule during Phase 2 will be reviewed.

Response: Staff made edits to the draft Basin Plan Amendment language to address USEPA's comments in order to ensure consistency with USEPA regulations and State Board policy concerning compliance schedules. Please refer to staff's detailed responses to USEPA's comments provided in the attachment to their letter.

USEPA Comment #3.

The positions described in this letter and the attachment are preliminary in nature and do not constitute a determination by EPA under Clean Water Act section 303(c) or 303(d). Approval/disapproval decisions will be made by EPA following adoption of the water quality standards and the TMDLs, and submittal to EPA by the State Board.

At the April 2008 public hearing for this package, Regional Board members directed staff to work with stakeholders to resolve concerns about the proposed program. Board staff participated in a facilitated stakeholder process for two years, delaying adoption. A significant amount of limited resources was spent on many stakeholder and workgroup meetings. While this process may have been helpful in resolving some stakeholder issues concerning implementation, the proposed water quality objectives have not changed, and the revised TMDLs are very similar to the original TMDLs. We hope this experience does not set a precedent for future TMDLs; we strongly recommend the Regional Board act expeditiously to adopt the proposed package, and begin the necessary implementation activities to address the impairment in the Sacramento-San Joaquin Delta.

Response: Staff believes that the stakeholder process helped develop a better overall amendment package. As described in staff's responses to USEPA's comments provided in the attachment to USEPA's letter, Board staff revised the proposed Basin Plan amendments and Resolution to address USEPA's concerns about completeness of the TMDL under the Clean Water Act and consistency with federal and state regulations and policies regarding NPDES compliance schedules, and to clarify how the proposed TMDL control program will maintain compliance with the California Toxics Rule and the San Francisco Bay mercury TMDL's allocation for Central Valley exports.

USEPA Comment #4.

Although the formal stakeholder group purportedly included individuals from all identified categories of stakeholders, the meetings were markedly dominated by those stakeholder groups who were able to expend substantial resources for travel and participation over the two year period. Stakeholder groups with limited resources were at a significant disadvantage, and were not able to have their concerns heard clearly. Participation from all stakeholder groups is essential, including participation from Tribal Nations and community groups representing consumers of fish. Future stakeholder processes must be conducted in a manner that allows all groups to equally participate. We suggest meeting independently with each group, to hear concerns and suggestions.

We appreciate the great deal of work that has gone into the development of the proposed Basin Plan Amendment. We appreciate the opportunity to review and comment. If you have questions, please contact me at (415) 972-3572, or Diane Fleck at (415) 972-3480.

Response: Staff is thankful for USEPA's appreciation and time spent attending stakeholder meetings and reviewing draft documents. Staff has been working on this TMDL for more than 5 years. It has been a complex and controversial effort.

Staff agrees that participation from all stakeholder groups is essential. During the more than five years we have been working on this TMDL, we have tried to reach out to stakeholders to get input as we developed our TMDL and control program. At the direction of the Regional Water Board, staff initiated a comprehensive, collaborative, stakeholder process to try to make sure we heard from all stakeholder groups and understood all their different perspectives. We recognize that community groups and others could not participate in this process to the same level that agencies, dischargers and discharger groups could. That is why staff made special efforts to contact community groups to make sure we understood their perspectives. The Regional Water Board contracted with the Center for Collaborative Policy (CCP) to facilitate our stakeholder process. CCP staff spent time and effort contacting community groups to find out what their concerns and issues were and to try to figure out ways of better integrating their participation in the process. We tried to make our presentations and information as jargon-free as possible to facilitate stakeholder input. The current proposed Basin Plan amendments (BPA) are the product of two years of in-depth stakeholder work, including months of fine tuning specific basin plan language and phrasing. Staff believes that the current wording is as close to a consensus as we can get, recognizing that the amendment must comply with federal and state requirements.

Staff tried to develop an amendment that met federal and state requirements and took into account input and perspectives from all the different stakeholder groups. No entity got everything it wanted. Virtually every entity involved in this process continues to have "some concerns" about parts of the proposed basin plan amendment. On many issues, a consensus is simply not possible. However, most stakeholder groups have agreed to continue to work with staff as Phase 1 is implemented to figure out how best to accomplish the task of reducing mercury concentrations in fish. The amendment contains provisions for the Central Valley Water Board to re-evaluate the control program elements after control studies are completed (the Phase 1 Study period). Staff will continue to work with community groups to develop and implement mercury control strategies and exposure reduction efforts. Staff welcomes additional suggestions from USEPA on how to improve our dialog with the community groups and provide a process where the community can feel part of the discussions.

USEPA ATTACHMENT TO LETTER:

USEPA Comment #5.

U.S. EPA COMMENTS

PROPOSED AMENDMENT FOR THE CONTROL OF METHYLMERCURY AND TOTAL MERCURY IN THE SACRAMENTO-SAN JOAQUIN DELTA ESTUARY, FEBRUARY 2010

I. Modifications to Chapter II (Existing and Potential Beneficial Uses) and III (Water Quality Objectives)

1. Designated Uses: We are pleased to see the COMM use as a proposed “designated beneficial use” for the Delta and Yolo Bypass (proposed BPA, page BPA 1). However, the designation should be clarified as an existing designated beneficial use, to be consistent with the existing REC-1 use which includes recreational fishing. The COMM use is defined as “uses of water for commercial or recreational collection of fish...” (Basin Plan, page II-2.00). Existing use designations should be identified either where the use has taken place or the water quality sufficient to support the use has existed since November 28, 1975, or both (see Advanced Notice of Proposed Rulemaking, 63 Fed Reg 36754). Recreational and commercial fishing is and has been taking place throughout the Delta; thus, an existing use designation is appropriate.

Response: Staff purposely proposes designating the use without describing it as existing or potential. We are proposing to designate the COMM beneficial use, which is the use that would normally be associated with people catching and safely eating fish. Regardless of whether we specifically designate the use or not, we already must protect the use of people catching and eating fish. If it is not specifically designated, it is already included as part of the contact recreation beneficial use. The amendment is proposed to protect COMM, regardless of whether it is existing or potential. We received comments to not include the COMM use, to include the use, to add existing in front of designated, and to add potential in front of designated. The question of whether to designate the use as existing or potential has been intensely discussed in several stakeholder meetings. Concentrations of mercury in fish and fishing activities vary across the Delta. Deciding which modifier is appropriate for each Delta subarea could be time and resource consuming and is not necessary for the scope of the current amendment. No federal or state law or regulation requires that the Central Valley Water Board modify a beneficial use to indicate it is existing unless the Central Valley Water Board is de-designating a use. Because the Central Valley Water Board is designating COMM, there is no need to determine if the use is existing or not.

USEPA Comment #6.

2. Listed Water Bodies: We are pleased to see the tables and figures in Appendix 43, including Table A43-1, which purports to be a comprehensive list of “distinct, readily identifiable water bodies within the boundaries of the ‘Legal’ Delta (as defined in California Water Code section 12220) that are hydrologically connected by surface water flows (not including pumping) to the Sacramento and/or San Joaquin Rivers” (proposed BPA, page BPA 26). The proposed COMM use, water quality objectives, and TMDLs will apply to these water bodies. This is consistent with the current Clean Water Act (CWA) 303(d) list, which lists all areas of the Delta as impaired for mercury. However, if this is not a comprehensive list of water bodies within the Delta, please identify any missing water bodies and explain why they are not included.

Response: Appendix 43 contains a list of all water bodies that staff could identify as being in the Delta/Yolo Bypass; therefore, to the best of our knowledge, it represents a comprehensive list of water bodies within the Delta/Yolo Bypass. The Delta has more than 1,000 miles of channels. The list of water bodies is the same as the list of water bodies that was included in the Central Valley Water Board diazinon and chlorpyrifos TMDL Basin Plan amendments for the Delta, with the exception that the methylmercury TMDL scope was expanded to include water bodies in the Yolo Bypass areas outside of the legal Delta boundary. The list represents all the mapped water bodies that are hydraulically connected to the main Delta channels. If additional water bodies are identified during Phase 1, we can amend Table A43-1 when we conduct our Phase 1 program review, if needed.

USEPA Comment #7.

3. Fish Consumption: We are very pleased to see new language under Program Overview on page BPA 2 of the proposed BPA, concerning the long term goal of the mercury program: “to enable people to safely eat four to five meals per week (128 – 160 g/day) of Delta fish.” The currently proposed fish tissue objectives protect people eating up to 32 g/day of fish. You note that “[t]he fish tissue objectives will be re-evaluated during the Phase 1 Delta Mercury Control Program Review and later program reviews to determine whether a higher consumption rate can be reasonably attained as methylmercury reduction actions are developed and implemented.”

The long term goal of the mercury program is consistent with Executive Order 12898, dated February 11, 1994, entitled, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” This order requires agencies to consider patterns of consumption of fish to ensure the protection of populations that principally rely on fish and/or wildlife for subsistence. Therefore, we strongly support your serious consideration of higher (subsistence) consumption patterns of Delta fish, when you consider revisions to the fish tissue objectives during the Phase 1 Mercury Control Program Review, and later reviews.

Response: The language for this long-term goal was developed during meetings in the Stakeholder Process. The intent was to recognize that there are people that eat Delta fish more frequently than one meal per week, which is the basis of the proposed fish tissue objectives. The long-term goal, as written, implied that the goal was to be able to eat 4-5 meals/week of the same fish species as those identified for the proposed water quality objectives (large trophic level 3 and 4 fish). Because of the difficulty of fully removing Gold Rush-era mercury that spread downstream of mined areas and continuing atmospheric deposition, staff is unable to confirm at this time that mercury concentrations to support eating 4-5 meals/week are attainable

in large trophic level 3 and 4 fish. As a result, Central Valley Water Board staff removed the long-term goal language. The language now states, "The Regional Water Board recognizes that some consumers eat four to five meals per week (128-160 g/day) of a variety of Delta fish species." The Basin Plan language still states that the fish tissue objectives will be reviewed at the end of Phase 1 and during later program reviews to see whether objectives protective of a higher consumption rate can be attained.

Staff and stakeholders are developing an Adaptive Management Approach planning document [a.k.a. MOI or Adaptive Management Plan] to guide Phase 1 activities. Staff will add a section to the document relating to the Regional Board's Phase 1 Program Review that will contain the long-term fish consumption goal text.

USEPA Comment #8.

II. Modifications to Chapter IV (Implementation)

1. TMDL Elements: The proposed BPA does not contain all the necessary TMDL elements: it does not contain a summary of the TMDLs/loading capacities, numeric targets, linkage analysis, and seasonal variations and critical conditions analysis. The BPA must clearly contain the TMDLs and all allocations (i.e., both load allocations and individual wasteload allocations for each NPDES discharger to the waters covered by the TMDLs.) Table A contains a summary of the current loads and allocations of each source category, for each Delta subarea; Tables B and C contain individual wasteload allocations (WLAs) for NPDES dischargers (wastewater and stormwater, respectively), for each subarea. Table D contains allocations for tributaries to each subarea. **Please include in the BPA, the TMDL for each subarea.** If the total of the allocations for each subarea in Table A is equal to the TMDL/loading capacity for each subarea, please clearly explain this. The remaining elements appear to be included in the BPA Staff Report and/or the TMDL Staff Report, Appendix A to the BPA Staff Report. Please reference these reports in the BPA or the Resolution adopting the BPA, as containing the remaining necessary elements.

Response: Board staff added the following text to the main text of the BPA (page 3) and similar text to Table A's footnote (a) to clearly explain how the sum of the allocations for each subarea in Tables A through D equals the assimilative capacity for that subarea:

For each subarea listed in Table A, the allocations for agricultural drainage, atmospheric wet deposition, open water, urban (nonpoint source), and wetlands plus the individual allocations for tributary inputs (Table D), NPDES facilities and NPDES facilities future growth (Table B), and NPDES MS4 (Table C) within that subarea equals that subarea's assimilative capacity.

Draft Finding #7 in the proposed Resolution adopting the BPA contains references to the draft Staff Report wherein the individual TMDL elements are provided. Draft Resolution #1 in the proposed Resolution contains the Board's approval of the Staff Report.

USEPA Comment #9.

2. Wasteload Allocations (WLAs): Tables B and C contain individual WLAs for NPDES dischargers (wastewater and stormwater, respectively). TMDLs must include allocations for all sources, including individual WLAs for all NPDES dischargers. We assume Tables B and C are comprehensive lists of municipal and industrial NPDES dischargers, and stormwater NPDES dischargers, respectively; if not, please include all NPDES dischargers and an individual WLA for each.

Response: Tables B and C are comprehensive lists of municipal and industrial NPDES dischargers and stormwater NPDES dischargers in the Delta and Yolo Bypass. Waste load allocations are assigned to all NPDES dischargers within the Delta/Yolo Bypass and load allocations are assigned to all the other source categories within the Delta/Yolo Bypass. In addition, load allocations are assigned to the tributary inputs to the Delta/Yolo Bypass. Waste load and load allocations will be assigned to point and nonpoint sources within the tributary watersheds when TMDLs and related control programs are developed for the upstream water bodies.

USEPA Comment #10.

3. Attainment of Water Quality Standards: The TMDLs must be set to attain all applicable water quality standards. Please clearly explain in the proposed BPA, or the proposed Resolution adopting the proposed BPA (by reference to Staff Reports, if appropriate), how the final methylmercury allocations and interim total mercury limits for NPDES dischargers will achieve and maintain compliance with the San Francisco Bay Mercury TMDL, water quality standards based on the California Toxics Rule total mercury criteria, and water quality standards based on the new methylmercury fish tissue objectives contained in the adoption package. It is not clear from the proposed BPA that all applicable water quality standards will be attained and maintained.

Response: Board staff added the following text to the proposed Resolution findings to address USEPA's comment:

9. *The Water Quality Control Plan for the San Francisco Bay contains a TMDL for mercury in San Francisco Bay that assigned to the Central Valley a load allocation of 330 kilograms total mercury per year.*
10. *Section 131.37 of Title 40 of the Code of Federal Regulations (or the California Toxics Rule (CTR)) includes a criterion of 0.05 µg/L total recoverable mercury for freshwater sources of drinking water that is enforceable for all waters with a municipal and domestic water supply use designation, including the Delta.*
15. *The proposed amendments modify Basin Plan Chapter IV (Implementation) to include interim total mercury limits for NPDES dischargers within the Delta and Yolo Bypass and total mercury reduction requirements for tributary watershed inputs to the Delta and Yolo Bypass. The draft final staff report for the Basin Plan amendments explains how the TMDL methylmercury allocations, interim total mercury limits for NPDES dischargers, and total mercury reduction requirements for tributary watershed inputs to the Delta and Yolo Bypass are set to attain all applicable water quality standards, including the CTR, the San Francisco Bay mercury TMDL allocation, and site-specific numeric fish tissue objectives for the Delta and Yolo Bypass north of the Delta.*

The TMDL and Basin Plan Amendment Staff Reports explain how the proposed Basin Plan amendments comply with the CTR and the San Francisco Bay TMDL. The California Toxics Rule (CTR) contains two criteria for mercury, measured as total recoverable mercury in water. The criterion of 0.050 micrograms per liter (μL) protects people exposed to mercury through fish consumption and drinking water. The criterion of 0.051 μL protects from exposure through fish consumption only. The fish plus drinking water criterion is assigned to waters with the municipal drinking water (MUN) beneficial use. The CTR criterion of 0.050 μL total recoverable mercury is not exceeded in Delta waterways where the MUN beneficial use is designated by the Basin Plan. As described in Sections 2.4.2 and 7.4.2 of the TMDL Report, the 0.05 μL mercury criterion is exceeded in outflow from the Cache Creek Settling Basin and possibly in Prospect Slough, Putah Creek, and Marsh Creek; however, MUN is not designated for these waterways. The TMDL Report explains how the CTR criterion will be achieved for these waterways and how the CTR will be maintained for Delta waterways already in compliance. The USEPA has already approved the Cache Creek Watershed TMDL. The proposed Basin Plan amendments contain a time schedule for completion of Putah and Marsh Creek TMDLs. Total mercury reductions in Cache and Putah Creeks as well as the Sacramento River TMDL (scheduled for completion in 2016) will reduce mercury in Prospect Slough to comply with the CTR. The proposed water quality objectives for the Delta and Yolo Bypass are more protective of human health than the CTR criterion of 0.051 μL (see TMDL Report Chapter 4.3.3). Thus, attainment of the water quality objectives will result in attainment of the CTR's criterion fish-only mercury criterion.

A recent publication authored by SFEI, USGS and UC Santa Cruz staff (David *et al.*, 2009) indicates that Central Valley exports likely already attain the San Francisco Bay mercury TMDL load allocation (330 kg/yr, to be assessed as a rolling five-year average either at Mallard Island, or as a 110 kg/yr reduction in total mercury inputs) as measured at the RMP Mallard Island monitoring station. As described in more detail in Section 7.2.1 in the TMDL Report, the mercury export rate developed by David and others (2009) is likely the most accurate for several reasons. This rate incorporates estimates of tidal dispersion in the load calculations, uses mercury data collected at Mallard Island, includes data collected during high flows, and accounts for heterogeneity in the cross section at Mallard Island in its error estimation method. However, the San Francisco Bay Water Board will not update the San Francisco Bay mercury TMDL until its five-year review. Also, comparable or greater load reductions may be needed from the Delta's tributary watersheds to address the methylmercury impairment in each area of the Delta and impairments specific to upstream watersheds. Therefore, Central Valley Water Board staff recommends that a 110 kg total mercury load reduction requirement be assigned to the tributary inputs to the Delta, which is included in the draft BPA.

The paper by SFEI/USGS/UCSC has the following citation and is available on the Internet:

David, N., L.J. McKee, F.J. Black, A.R. Flegal, C.H. Conaway, D.H. Schoellhamer, and N.K. Ganju. 2009. Mercury concentrations and loads in a large river system tributary to San Francisco Bay, California, USA. *Environmental Toxicology and Chemistry*, 28 (10): 2091-2100. Available at:
http://www.sfei.org/watersheds/reports/NDavid_MecuryConcentrations.pdf

Also, since the San Francisco Bay Water Board adopted the TMDL, mercury loads from two of the largest NPDES dischargers to the Delta have decreased and remediation actions at Turkey Run and Abbott mines have reduced mercury loads in Cache Creek. The draft BPA includes several short term provisions that should lead to further reductions, including requirements for NPDES dischargers to implement mercury load minimization programs.

USEPA Comment #11.

4. Phase 1 Control Actions: On page BPA-3 of the proposed BPA, it states, “During Phase 1, all dischargers shall implement reasonable, feasible controls for inorganic (total) mercury.” Please clarify what is meant by “reasonable, feasible controls.” We know this issue was discussed during the stakeholder process, and a consensus could not be reached. However, the Regional Board should clarify what it expects dischargers to implement during Phase 1.

Response: Board staff intended the terms to be used as they are defined in standard dictionaries. During the Phase 1 implementation period, Board staff will work with stakeholders to evaluate which inorganic and methylmercury management practices appear to be “reasonable” and “feasible” for different types of sources. If the Central Valley Water Board does not agree with the stakeholder determinations about “reasonable” and “feasible,” the Water Board can take independent action, consistent with their regulatory authority. The goal is to allow flexibility during the adaptive management phase, without limiting the definitions of “reasonable” and “feasible,” because limiting the definitions could unintentionally limit what the Central Valley Water Board might be able to do under varying circumstances. Porter Cologne gives the Water Boards flexibility because what is “reasonable” and “feasible” can be different for each source category, in a similar way that USEPA regulates NPDES municipal POTWs and MS4s and nonpoint source discharges differently.

In addition to providing flexibility, the inclusion of the words “reasonable” and “feasible” was intended to provide assurances to dischargers, particularly state and federal agencies, who would be or could be held responsible for inorganic mercury control actions. The text without “reasonable” and “feasible” added could be construed to indicate that DWR, USBR, and other agencies that manage structures such as the Fremont Weir, Cache Creek Settling Basin, reservoirs, etc., and even State Lands Commission (as manager of the State’s sovereign lands; e.g., the State of California has fee ownership of the beds of all navigable rivers and lakes, including all tidal waterways between the ordinary high water marks) could be held responsible for removing all inorganic mercury from river flows that pass over such structures and State lands, which would be infeasible, prohibitively expensive, and likely unnecessary for what is needed to solve the mercury impairment.

USEPA Comment #12.

5. Phase 1 Review: It is clear the proposed BPA contemplates that Phase 2, implementation of control actions, will begin after stakeholder completion of Phase 1, Control Studies. However, it appears that control actions for compliance with allocations is only required after formal Board review and action on Phase 1, and Board development of tributary TMDLs. **If Regional Board action is required to either confirm or amend the proposed TMDLs, and to confirm development of tributary TMDLs, the TMDLs for the Delta will not be considered complete under CWA section 303(d) until such action has been taken.**

The proposed BPA at page BPA 2 states, “At the end of Phase 1, the Regional Water Board shall conduct a Phase 1 Delta Mercury Control Program Review that considers: modification of methylmercury goals, objectives, allocations, and/or Final Compliance Date... the linkage analysis, allocations, and time schedules shall be adjusted at the end of Phase 1, or subsequent program review, if appropriate.” The proposed BPA, at page BPA 3, states, “All dischargers shall implement methylmercury management practices identified during Phase 1 that are reasonable and feasible. However, implementation of methylmercury management practices identified in Phase 1 is not required for the purposes of achieving methylmercury allocations until the Regional Water Board has completed the Phase 1 Delta Mercury Control Program Review and has developed the tributary mercury control programs.”

As proposed, Phase 2, implementation of control actions to achieve allocations, would be contingent upon the review and formal action of the Regional Board. This means, in effect, that the TMDLs would be implemented only following subsequent Regional Board action. However, once appropriate Phase 1 studies are completed, i.e., once appropriate management control actions and practices are identified, implementation must begin. The BPA can reference expectations of future Regional Board review and potential revisions to the TMDLs and implementation provisions, but cannot make implementation contingent upon future Board actions. **The BPA must be revised to state that Phase 2 control actions shall be implemented when appropriate Phase 1 studies have been completed.**

Response: To address USEPA’s comments, Board staff added a back stop date for when Phase 2 would begin. Staff did this (instead of stating “Phase 2 control actions shall be implemented when appropriate Phase 1 studies have been completed”) to address the possibility that a substantial delay in completing one Phase 1 study could cause a delay in beginning Phase 2 (a concern brought up during the stakeholder meetings). Staff made specific edits consistent with USEPA’s comments in order to ensure that the Delta TMDLs would be considered complete under CWA section 303(d) to text on page 2 in the “Program Overview” section and on page 3 in the “Final Compliance Date” section. In addition, since point source dischargers will require compliance schedules consistent with federal and state laws and regulation, point source dischargers must begin implementation of control actions as soon as possible.

USEPA Comment #13.

6. Allocations Based on Wet Year Data: The proposed BPA at page BPA 3 states that load allocations for tributary inputs, urban areas outside of MS4 service areas, open water habitat, atmospheric deposition, and waste load allocations for the MS4s, are based on relatively dry water year data (2000 through 2003), and that these allocations will be re-evaluated during the review of the Phase 1 Delta Mercury Control Program. We recognize that wet years are likely to generate different results and influence the source analysis which may necessitate revisions to the allocations. Please clarify that allocations will be re-evaluated as wet year data become available during Phase 1, and not during the review of the Phase 1 Program, which will occur at the end of the Phase 1 period, 9 years later or longer.

Response: To clarify, Board staff has and will continue to evaluate new information about MS4s and other sources and the science of methylmercury as whole as it becomes available during Phase 1 and later phases. Staff does not propose considering adjustments to load and

waste load allocations until the end of the Phase 1 period because, given the method of calculating the allocations (please see Section 8.1 in Chapter 8 of the TMDL Report), if allocations are adjusted for an individual source (e.g., a single MS4 or WWTP), then all of the load and waste load allocations for a Delta subarea TMDL must be recalculated, and if allocations are adjusted for a source category as a whole (e.g., MS4s as a whole or wetlands as a whole), all of the load and wasteload allocations for all of the Delta subarea TMDLs must be recalculated. This would require an immense effort and an additional Basin Plan amendment. (If the allocations are not changed, then the current allocations are still in effect.) Such an effort before the Phase 1 Program Review might make sense only if new information became available that indicates a substantial change in the overall strategy upon which the control program is based is needed.

USEPA Comment #14.

NPDES

7. New Dischargers: On page BPA 4 of the proposed BPA, it states that, “NPDES permitted facilities that begin discharging to the Delta or Yolo Bypass during Phase 1 shall comply with the above requirements.” The requirements limit discharges of inorganic mercury to facility performance-based levels. Please clarify that new dischargers, as defined in the State Water Resources Control Board (State Board’s) 2008 Policy for Compliance Schedules in NPDES Permits (CS Policy), who begin discharging to the Delta or Yolo Bypass during Phase 1, are subject to the State Board’s CS Policy concerning the new methylmercury fish tissue water quality objectives included in this package, the State Board’s Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) for existing mercury criteria in the California Toxics Rule (CTR), as well as 40 CFR 40 122.4(i)¹

¹ See also 9th Circuit Court of Appeals decision in *Friends of Pinto Creek v. U.S. Environmental Protection Agency*, 504 F.3d 1007 (9th Cir. 2007).

Response: The proposed BPA assigns a methylmercury waste load allocation and performance-based interim total mercury load limits for new and existing NPDES facility discharges, in addition to any existing state and federal laws and policies for NPDES discharges. The proposed BPA does not and is not intended to take the place of or have any effect on existing State Water Board policies. Board staff described in Sections 6.2.10 and 6.2.13 in Chapter 6 of the BPA Staff Report how the proposed BPA requirements are designed to comply with the SIP (including the CTR), and the State Water Board’s CS Policy. Board staff can clarify this in the letter transmitting the TMDL/BPA package to the USEPA. Board staff does not recommend revising the draft BPA language.

USEPA Comment #15.

8. Unassigned Wasteload Allocations (WLAs): The proposed BPA at Table B includes an “unassigned allocation for NPDES facility discharges” for each subarea. Footnote (d) states that the unassigned WLAs are for new discharges to surface waters that begin after the effective date of the amendment. We strongly support the proposal to include a mass allocation for new and expanded discharges, and to require these discharges to meet the 0.06 ng/l methylmercury concentration levels prior to being assigned a portion of the allocation. However, it is not clear from the language in the footnote, whether the phrase “where the additional allocation does not exceed the product of the net increase in flow volume and 0.06 ng/l methylmercury” applies to only item (3), expansions to existing facilities beyond their allocations listed in Table B, or whether it also applies to items (1), existing facilities that previously discharged to land, and (2), newly built facilities. We assume the phrase applies to all three items; please clarify this. If it does not apply to all three items, please explain why not.

Response: The phrase applies only to the third item. In addition, the Unassigned WLA (waste load allocation) was carefully revised for the February 2010 draft Basin Plan Amendment (BPA) with input from the NPDES Workgroup to not include a methylmercury concentration limit (e.g., 0.06 ng/l methylmercury) for new and existing facilities because concentration-based limits could inhibit other beneficial actions such as water conservation, reclamation and recycling. The Unassigned WLA does not require expansions to existing facilities beyond their allocations to meet 0.06 ng/l methylmercury, but instead to meet the product of the net increase in flow volume and 0.06 ng/l methylmercury. This is consistent with the application of the Unassigned WLA to new facilities and facilities that previously discharged to land. Such consistency and equitability is needed to support Central Valley Water Board goals for regionalization of WWTPs in the Central Valley (e.g., Resolution 2009-0028: Policy in Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants).

Because of the way the mass-based Unassigned WLAs and other WLAs and LAs (load allocations) were calculated, an additional concentration limit is not needed. As described in Section 8.1.3 in the February 2010 TMDL Report, Board staff assumed that new WWTPs would be designed to discharge effluent with methylmercury concentrations equal to or less than 0.06 ng/l, and calculated the “Unassigned WWTP allocations” by multiplying the predicted volumes shown in Table 8.3a by 0.06 ng/l methylmercury. The other WLAs and LAs were calculated in a way that accommodates the addition of the mass-based unassigned WLAs without exceeding the assimilative capacity. Please refer to Section 8.1.3 in the February 2010 TMDL Report for a detailed description and example of how the allocation calculations were made.

USEPA Comment #16.

9. Interim Wasteload Allocations (WLAs) and Permit Limits: Final methylmercury WLAs are included in the proposed BPA, and compliance with them must be achieved as soon as possible, but no later than 2030, in 20 years. Interim WLAs are not included. Given the extent of time for Phase 1, 9 years with possible extensions, and the total length of 20 years to 2030 to reach final WLAs, we strongly urge the Regional Board to include interim numeric WLAs, in methylmercury and/or total mercury, and to include measurable benchmarks toward reaching final WLAs.

In accordance with the State Board’s CS Policy, interim numeric permit limits in methylmercury and/or total mercury must be included, and should reflect measurable benchmarks toward reaching final limits based on the final wasteload allocations.

Response: To clarify, the proposed BPA includes Phase 1 requirements with schedules for NPDES discharges, for example, performance-based interim total mercury mass load limits (for NPDES facilities); pollutant minimization programs and Phase 1 methylmercury control studies (for NPDES facilities and Phase I (large) NPDES MS4s); and implementation of methylmercury management measures that are reasonable and feasible (all NPDES dischargers). The interim limits, pollutant minimization programs, and other inorganic mercury and methylmercury control actions are expected to limit and reduce the discharges of inorganic mercury and methylmercury while the studies are being conducted. The State Water Board Compliance Schedule Policy still applies to NPDES dischargers; as a result, consistent with provisions in the Policy, NPDES dischargers will still be required to implement appropriate measures to meet waste load allocations or justify why it is currently infeasible to meet waste load allocations. Additional measurable benchmarks can be added to individual permits based on the information generated by the Phase 1 studies. Additional benchmarks (e.g., interim WLAs) can be included in the Basin Plan based on the Phase 1 study results and Phase 1 Program Review.

Also, Board staff acknowledged in the BPA Staff Report (Section 4.2.1, Consideration #5) that another option would be to simply require all point sources to make the same percent total mercury reductions, instead of having performance-based interim mass limits. A similar approach has been used elsewhere; for example, NPDES facilities and MS4s were required to reduce their mercury discharges to San Francisco Bay by 20-40% and 52%, respectively, by the San Francisco Bay mercury TMDL implementation program. However, because many of the NPDES facility and Phase 1 (large) MS4 dischargers are already at various stages of implementing rigorous mercury pollutant minimization plans and some have already achieved substantial total mercury and methylmercury reductions (e.g., see discussion in Section 6.2.3.1 in the TMDL Report, and Sections C.4, D.4, and Table C.23 in Appendix C of the BPA Staff Report), it may not be feasible for all NPDES discharges to meet an interim mass limit based on the same percent reduction (e.g., 40%).

USEPA Comment #17.

Language concerning Phase 1 permit limits is contained on page BPA 4 and states that, “all facilities listed in Table B shall limit their discharges of inorganic (total) mercury to facility performance-based levels.” Table B lists municipal and industrial wastewater dischargers. EPA, however, expects *all* post-TMDL NPDES permits to contain, at a minimum, interim performance-based numeric limitations that represent a reasonable measure of current performance, and such limits should be in place as soon as they can be calculated. These interim limitations should be calculated using a methodology that is consistent for all the municipal and industrial NPDES dischargers. EPA would support an interim annual mass-based limit calculated using average flow and mass loadings data, with the use of a reasonable statistical allowance for the calculation of a not-to-be exceeded limit. However, we would not support using the design flow for a facility whose flow is substantially under design flow, as this calculation would not be representative of current performance.

Response: To clarify, the paragraph after the paragraph cited by USEPA’s above comment contains the following text, which requires new NPDES facility discharges to comply with the same requirements for pollutant minimization programs and performance-based limits as existing NPDES facility discharges:

“NPDES permitted facilities that begin discharging to the Delta or Yolo Bypass during Phase 1 shall comply with the above requirements.”

[Page 4 in February 2010 draft BPA]

Board staff agrees with USEPA in that design flows for facilities whose flows are substantially under design flows are not representative of current performance.

USEPA Comment #18.

Finally, the compliance schedule, if permissible, must be stated as enforceable language in the permit (as soon as possible, but no later than 2030), along with a final water quality-based effluent limit (WQBEL). The final WQBEL must be consistent with the final WLA, and could be expressed simply as an annual mass loading equal to the WLA.

Response: Board staff who develop and enforce NPDES has worked extensively with TMDL staff to develop the draft BPA language; Board staff from the TMDL and NPDES units will continue to work together to implement the TMDL, including ensuring that USEPA’s above comment is expressed in the NPDES permits.

USEPA Comment #19.

10. Compliance Schedules/Phase 2: It appears that the proposed BPA contemplates that compliance schedules for NPDES dischargers will *only* start at the beginning of Phase 2, after the Regional Board completes a review of the Phase 1 Control Studies and takes formal actions (to confirm or amend the TMDL elements, and develop tributary TMDLs). See comment 5. above. The proposed BPA at page BPA 3 states, “Beginning in Phase 2, the Regional Water Board shall, as necessary, include schedules of compliance in NPDES permits for compliance with water quality-based effluent limits based on the wasteload allocations.” This intent is inconsistent with EPA regulations concerning compliance schedules at 40 CFR 122.47 and the State Board’s CS Policy concerning compliance schedules.

EPA regulations and the State Board’s CS Policy require that compliance schedules be as short as possible, but may include time to complete a design study, e.g., a Phase 1 control study (see CS Policy section 6) a): “Any compliance schedule must require compliance as soon as possible, taking into account the amount of time reasonably required for the discharger to implement actions, such as designing and constructing facilities or implementing new or significantly expanded programs and securing financing, if necessary, to comply with a more stringent permit limitation specified to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard.”).

Based on the foregoing, and because the final QBELs will not be immediately effective in permits issued or modified while Phase 1 studies are being completed, language referring to commencement of schedules in Phase 2 must be deleted (i.e., delete the phrase “Beginning in Phase 2” from the language quoted above). The Regional Board may include language that it will review the feasibility of NPDES dischargers meeting the final QBELs after the Phase 1 studies are complete, i.e., it will review its determination of whether a discharger can meet a methylmercury WLA based on reliable data and information to characterize sources, treatment efficiencies, and variability in methylmercury concentrations, and the Phase 1 studies will be necessary to make these determinations. Thus we suggest modifying the BPA to include language stating that when Phase 1 studies are complete, the need for additional time to comply with final QBELs during Phase 2 will be reviewed.

The State Board’s CS Policy also requires the schedule to include interim requirements and dates for their achievement, and that if the CS exceeds one year, the Regional Board shall establish interim numeric limitations, and may also impose interim requirements to control the pollutant (State Board CS Policy, section 7, page 6). These details are appropriate to consider during any permit reissuance after adoption and approval of the TMDLs.

Response: To address USEPA’s comments in order to ensure consistency with USEPA regulations and State Board policy concerning compliance schedules, staff edited text to remove “Beginning in Phase 2,” and added text to better define the compliance schedules and related Phase 1 studies and review consistent with USEPA comments on page 4 in the “Final Compliance Date” section.

USEPA Comment #20.

MS4s

11. BMPs: The proposed BPA at page BPA 4, under “Requirements for NPDES Permitted Urban Runoff Discharges,” states that MS4 dischargers listed in Table C shall implement best management practices (BMPs) consistent with their existing permits. Either in a control study or a separate plan, all MS4s should be required to demonstrate how BMPs and pollutant minimization measures will effectively reduce total mercury and methylmercury discharges and quantitatively meet the WLAs (see “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs,” Robert H. Wayland III and James A. Hanlon, November 22, 2002, available at <http://www.epa.gov/npdes/pubs/final-wwtmdl.pdf>).

Response: Staff does not recommend adding new language to the draft BPA that specifically requires all MS4s to conduct a Phase 1 control study or comparable plan at this late date for several reasons. The current BPA language was developed through a very involved stakeholder process, which spent time discussing potential requirements for MS4s and considering factors that affect equitability and study feasibility and effectiveness. Source control studies require substantial effort and funds. It would be very time-consuming and costly to modify the statewide general permit [NPDES No. CAS000004] that governs small MS4s to include study requirements, which would almost certainly cause substantial delays in developing the Delta TMDL without a commensurate generation of information. Small MS4s can make use of the Phase 1 control study results, or conduct their own studies, to develop plans to meet to their WLAs.

The WLAs for MS4s will be added to both the individual MS4 permits for large MS4s and the statewide permit for small MS4s. Once the Phase 1 methylmercury control studies have been completed, all MS4s will be required by their permits to submit plans that quantitatively demonstrate how BMPs and pollutant minimization measures will effectively reduce their discharges to achieve the WLAs, and if the Phase 1 studies indicate that achieving a given WLA is infeasible, detailed information on why full compliance is not achievable, what methylmercury load reduction is achievable, and an implementation plan and schedule to achieve partial compliance.

The draft BPA also allows the Central Valley Water Board Executive Officer to require that control studies be conducted by other significant sources of methylmercury identified during Phase 1 that were not specifically identified in the draft BPA.

USEPA Comment #21.

12. Phase I Control Studies: The proposed BPA, starting at page BPA 5, requires various point and nonpoint sources discharging into the Delta, including MS4s, to conduct control studies and develop strategies for complying with the load allocations and WLAs. The proposed BPA allows dischargers seven years (longer under certain circumstances), to submit final reports to the Regional Board. For MS4s, we believe this lengthy schedule overlooks the substantial progress already made in identifying control strategies under their existing NPDES permits. For example, in May 2004, the Sacramento area MS4 permittees submitted a comprehensive mercury control plan to the Regional Board which is similar to the report which would be due within seven years under the proposed BPA. Substantial progress has been made by the Sacramento area MS4 permittees since 2004 in identifying and implementing mercury control strategies, which can be seen in the 2009 annual report submitted to the Regional Board under NPDES permit number CAS082957. Strategies to reduce total mercury discharges will likely reduce methylmercury discharges. Accordingly, we suggest the BPA be revised to require submittal of control study reports for Phase I MS4s (Sacramento, Stockton and Contra Costa County) within a shorter period of time of the BPA's effective date.

Response: Staff acknowledges that MS4s have made progress with BMP studies but does not recommend adding new language to the draft BPA that specifically requires earlier deadlines for submission of Phase 1 control study reports for Phase 1 MS4s for several reasons. The current BPA language was developed through a very involved stakeholder process, which spent time discussing what would be realistic study milestone schedules. Although the permits for Sacramento and Stockton MS4s already contain requirements for BMP studies and mercury reduction activities, the permit requirements were developed before adoption of the WLAs and additional time will be needed if the permit-required studies and pollution minimization efforts are not adequate to achieve the WLAs, which include substantial reduction requirements for MS4s in the Sacramento, San Joaquin, Marsh Creek, Mokelumne, and Yolo Bypass subareas (e.g., 45% to 75% reductions; please refer to Table 8.4 in Chapter 8 of the TMDL Report). Board staff will review new MS4 information as it becomes available throughout Phase 1 and the MS4 permits will be modified as needed during the permit renewal cycle to comply with the State Water Board's Compliance Schedule Policy. Finally, the draft BPA contains language that states all Delta/Yolo Bypass point and nonpoint sources shall implement reasonable, feasible controls for inorganic (total) mercury, and should implement reasonable, feasible methylmercury management practices, too, that are identified during Phase 1.

USEPA Comment #22.

Table C of the proposed BPA identifies a number of Phase II MS4s covered by the State Board's general NPDES permit number CAS 000004, and are assigned WLAs. The proposed BPA does not require Control Studies for these MS4s; we recommend the proposed BPA include these entities in its requirement to complete Control Studies. However, these MS4s have been under permit for less time than the Phase I MS4s, and have less experience with stormwater management. As such, we suggest the BPA provide a reasonable time for the Phase II MS4s for submittal of Control Study reports to the Regional Board.

Response: Please refer to Board staff's response to "USEPA Comment #20, which also address the above USEPA comment.

USEPA Comment #23.

Control Studies

13. Objectives: We suggest adding a requirement to the proposed BPA at page BPA 6, under [Control Study] Study Objectives, that implementation plans and schedules which are submitted by dischargers, provide for compliance with allocations and WLAs at the earliest practicable time. This is consistent with the State Board's CS Policy and with EPA's regulations concerning compliance schedules for NPDES permittees, both of which require compliance with effluent limits as soon as possible. Nonpoint sources should also be required to comply with allocations at the earliest practicable time.

Response: Board staff made the suggested revision.

USEPA Comment #24.

14. Mercury Control Studies Schedules: The proposed BPA at page BPA 8, under Mercury Control Studies Schedules, states that if dischargers do not comply with Control Study implementation schedules, the Executive Officer shall consider issuing individual waste discharger requirements. We suggest clarifying what those requirements might include, and we recommend methylmercury limits consistent with allocations.

Response: Board staff recommends the general text because flexibility is needed given the diverse nature of the variety of point and nonpoint source dischargers in the Delta and Yolo Bypass. Staff hopes that USEPA will work with us and the other stakeholders as the control program progresses in Phase 1 and welcomes USEPA's assistance in determining what the requirements might include.

USEPA Comment #25.

15. Adjusting Allocations: The proposed BPA at page BPA 9 says that as part of the Phase 1 Delta Mercury Control Program Review and subsequent reviews, the Regional Board may

consider adjusting allocations to allow methylmercury discharges from existing and new wetland restoration and other aquatic habitat enhancement projects, if certain conditions are met. We support the Board in making appropriate adjustments to allocations based on new information, so long as the assimilative capacity in the water body is not exceeded. Adjustments to allocations between sources are likely to trigger EPA review and approval.

Response: Staff agrees that adjustments to individual source allocations can only be made within the context of still meeting the overall load reductions that are needed to achieve the fish tissue objectives. If one allocation is adjusted upward, other source allocation(s) would need to be adjusted downward to compensate in order to not exceed the assimilative capacity. Adjustments to allocations also would trigger a new Basin Plan amendment and associated scientific peer and public review process, and USEPA review and approval.

USEPA Comment #26.

16. Compliance Monitoring: The proposed BPA at page BPA 9, under Compliance Monitoring, says that compliance points for MS4s required to conduct methylmercury monitoring are those locations described in the individual NPDES permits or otherwise determined to be representative of the service area. We recommend requiring that MS4s include a discussion of compliance points in their Control Study.

Response: Staff agrees that it would be useful for the Phase 1 control studies to evaluate in terms of methylmercury whether the compliance points in permits are representative of the MS4 service areas. At the same time, staff does not recommend adding new language to the draft BPA that requires such a specific element for the MS4 Phase 1 control studies at this late date for a couple reasons. The current BPA monitoring and study requirements were developed through a very involved stakeholder process, which spent time discussing study requirements that should be included in the BPA and what factors could be evaluated by the studies. Many factors, including the location of compliance points, could and should be addressed by the studies. The draft BPA commits the Board staff to working with a Technical Advisory Committee (TAC) and Stakeholder Group (SG) to provide a "Control Study Guidance Document". Board staff will work with stakeholders to determine which factors will be included in the guidance for MS4s, and expects that evaluating whether the compliance points in permits are representative of the MS4 service areas in terms of methylmercury – or a comparable evaluation – will be one of those factors. The concept was inherent in several elements identified in the draft annotated outline, "Delta Methylmercury TMDL Control Studies Guidance Document - December 2009" developed by Board staff and other stakeholders who participated in the MOI Workgroup, and staff included USEPA's above comment in staff notes to be used in preparation of the next draft outline.

USEPA Comment #27.

We also recommend the BPA require monitoring for Phase II MS4s, similar to that which is required for Phase I MS4s at page BPA 9. Since the general NPDES permit for the Phase II MS4s does not require stormwater monitoring, the BPA would need to clarify that monitoring of representative outfalls would be required for Phase II MS4s as is required by the individual MS4 permits for the Phase I MS4s.

Response: Staff does not recommend adding new language to the draft BPA that specifically requires Phase II (small) MS4s to conduct stormwater monitoring. The current BPA language was developed through a very involved stakeholder process, which spent time discussing potential requirements for MS4s. Monitoring requires substantial effort and funds. It would be very time-consuming and costly to modify the statewide general permit [NPDES No. CAS000004] that governs small MS4s to include monitoring requirements, which would almost certainly cause substantial delays in developing the Delta TMDL without a commiserate generation of information. Small MS4s can make use of the Phase 1 control study results and Phase I (large) MS4 monitoring results, or conduct their own monitoring as needed, to develop plans to meet to their WLAs.

The WLAs for MS4s will be added to both the individual MS4 permits for large MS4s and the statewide permit for small MS4s. Once the Phase 1 methylmercury control studies have been completed, all MS4s will be required by their permits to submit plans that quantitatively demonstrate how BMPs and pollutant minimization measures will effectively reduce their discharges to achieve the WLAs, and if the Phase 1 studies indicate that achieving a given WLA is infeasible, detailed information on why full compliance is not achievable, what methylmercury load reduction is achievable, and an implementation plan and schedule to achieve partial compliance.

Board staff referred to USEPA's 2002 guidance document, "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"¹, throughout the development of the Delta methylmercury TMDL source load estimates and load allocations for urban areas within and outside of MS4s. The guidance document states:

- WQBELs for NPDES-regulated storm water discharges that implement WLAs in TMDLs may be expressed in the form of best management practices (BMPs) under specified circumstances.
- When a non-numeric water quality-based effluent limit is imposed, the permit's administrative record, including the fact sheet when one is required, needs to support that the BMPs are expected to be sufficient to implement the WLA in the TMDL.
- The NPDES permit must also specify the monitoring necessary to determine compliance with effluent limitations. ... Where effluent limits are specified as BMPs, the permit should also specify the monitoring necessary to assess if the expected load reductions attributed to BMP implementation are achieved (e.g., BMP performance data).

The above indicates that monitoring of MS4 discharges does not need to be a required component of evaluating compliance with the WLAs in the Basin Plan amendment, so long as the NPDES permits for the MS4s and associated Fact Sheets support that the BMPs are expected to be sufficient and monitoring necessary to determine compliance with the effluent limitations is specified. Until the Phase 1 methylmercury control studies have been completed, it would be premature to specify the type of monitoring needed to determine compliance with the

¹ USEPA. 2002. Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs. Memorandum from Robert H. Wayland, III (Director, Office of Wetlands, Oceans and Watersheds) and James A. Hanlon (Director, Office of Wastewater Management) to Water Division Directors, Regions 1 – 10, 22 November 2002. Available at: <http://www.epa.gov/owow/tmdl/stormwater/>

WLAs and corresponding QBELs. Consequently, the following text was included in the draft BPA “Compliance Monitoring” section to allow flexibility:

“Compliance with the load allocations for nonpoint sources and waste load allocations for MS4s may be documented by monitoring methylmercury loads at the compliance points or by quantifying the annual average methylmercury load reduced by implementing pollution prevention activities and source and treatment controls.”

The San Francisco Bay Basin Plan similarly specified that MS4s could demonstrate attainment of their WLAs by (a) quantifying the annual average mercury load reduced by implementing pollution prevention activities and source and treatment controls; (b) quantifying their mercury load as a rolling five-year annual average using data on flow and water column mercury concentrations; or (c) quantitatively demonstrating that the mercury concentration of suspended sediment that best represents sediment discharged with urban runoff is below the TMDL suspended sediment target.

USEPA Comment #28.

Tributary Watersheds

17. Schedule for Tributary TMDLs: The proposed BPA at pages BPA 12 and 13 provides a schedule for completion of tributary TMDLs. Nine water bodies are listed with schedules for TMDL completion through 2017. We are pleased to see this schedule; we support the Board’s desire to complete these nine tributary TMDLs in the next seven years.

Response: No response needed. Note, it is expected that more than nine CWA 303(d) listed impaired reaches will be addressed by those TMDLs.

USEPA Comment #29.

Mercury Offsets

18. General: EPA’s 2003 Water Quality Trading Policy (EPA’s Trading Policy) does not allow trading of bioaccumulative pollutants. During its drafting, a limited exception for pilot projects was added, as a result of Region 9’s discussions with our Washington, D.C. office concerning the Sacramento Regional County Sanitation District’s proposed trading project for mercury.

At page 4, the Policy states: “EPA does not currently support trading of pollutants considered by EPA to be persistent bioaccumulative toxics (PBTs). EPA would consider a limited number of pilot projects over the next two to three years to obtain more information regarding trading of PBTs. EPA believes pilot projects may be appropriate where the predominant loads do not come from point sources, trading achieves a substantial reduction of the PBT traded and where trading does not cause an exceedance of an aquatic life or human health criterion. Based on the findings of these pilot projects, EPA will consider making revisions to its policy.”

EPA is cautiously supportive of carefully crafted, limited, individually negotiated offset pilot projects for bioaccumulative pollutants, which include projects for mercury and methylmercury. EPA Region 9 is also cautiously supportive of the Regional Board's adoption of a very carefully drafted and limited methylmercury offset program for the Delta. We applaud Board staff and stakeholder efforts to outline key principles intended to guide the development of such an offset program. Below are our comments on the key principles included in the proposed BPA at page BPA 13. Our comments also consider the detailed workgroup discussions of these principles which are reflected in Appendix E of the Adaptive Management Approach for Implementing the Delta Methylmercury TMDL (previously, the Memorandum of Intent (MOI) document). Community-based organizations are understandably concerned about any offset or trading program for mercury and/or methylmercury, and we recommend their full involvement in the development of any formal program.

Response: The proposed guiding principles are the product of intense stakeholder discussion over several months. Staff believes that the guiding principles provide a good framework for the Regional Water Board to use in evaluating proposed pilot offset projects and to guide development of an offset program. The Central Valley Water Board will continue to coordinate closely with the US EPA to evaluate proposed projects to ensure they are consistent with USEPA's trading policy and other applicable federal requirements.

USEPA Comment #30.

Principle on Net Environmental/Community Benefit: "Offset credits should only be available to fulfill a discharger's responsibility to meet its (waste) load allocation after reasonable control measures and pollution prevention strategies have been implemented."

While EPA agrees with the principle in concept, we strongly recommend the Board clearly define "reasonable control measures." We are aware from workgroup discussions that different stakeholder groups have widely different interpretations of which control measures are reasonable.

Response: Board staff recommends not defining "reasonable" in the draft BPA for several reasons. (Note, the "control measures" phrase was changed to "load reductions" for the agenda package). Although only one NPDES facility has expressed serious interest in conducting an offset project in the near future, the Basin Plan text needs to be flexible enough to allow both point sources (NPDES facilities and MS4s) and nonpoint sources (e.g., wetlands, agriculture, water and flood management agencies), to conduct offset projects. During the Phase 1 implementation period, Board staff will work with a stakeholder process to evaluate which inorganic and methylmercury control measures appear to be reasonable and feasible for different types of sources. If the Regional Water Board does not agree with the stakeholder determinations about reasonable and feasible, the Water Board can take independent action, consistent with their regulatory authority. The goal is to allow flexibility during the adaptive management phase (Phase 1), without limiting the definitions of reasonable and feasible, because limiting the definitions could unintentionally limit what the Water Board might be able to do under varying circumstances. Porter Cologne gives the Water Boards flexibility because what is reasonable and feasible can be different for each source category, in a similar way that USEPA regulates NPDES municipal POTWs and MS4s and nonpoint source discharges differently.

In addition to providing flexibility, the inclusion of the word reasonable was intended to provide assurances to dischargers, including state and federal water management and flood management agencies, who would be or could be held responsible for inorganic mercury and methylmercury control actions. Please see additional discussion on this topic in Board staff response to “USEPA Comment #11”.

Finally, the variety of “reasonable control measures” is expected to increase as progress is made with the Phase 1 studies. That is, a greater number of reasonable control measures are expected to be available later in Phase 1 than early in Phase 1. As a result, the timing of pilot offset project proposal could affect how the term “reasonable” is used. The draft BPA contains language that states all Delta/Yolo Bypass point and nonpoint sources shall implement reasonable, feasible controls for inorganic (total) mercury, and should implement reasonable, feasible methylmercury management practices, too, that are identified during Phase 1. (Please see Board staff responses to “USEPA Comment #11” for discussion on how the words reasonable and feasible are used in this context.)

USEPA Comment #31.

(Second) Principle on Net Environmental/Community Benefit: “Offsets should not be allowed in cases where local human or wildlife communities bear a disparate or disproportionate pollution burden as a result of the offset.”

EPA strongly agrees with this principle, and we recommend adding specific language that explicitly disallows the creation of localized hot spots. Any proposed pilot project must demonstrate that sufficient assimilative capacity exists in the water body to avoid creating a local hot spot.

Response: Board staff does not recommend adding text that explicitly disallows the creation of a localized hot spot for the following reasons. The principles have been the subject of a very involved, intense stakeholder process that began with the first draft of the Basin Plan amendment long before the recent formal stakeholder process was implemented. Staff hesitates to add new language at this late date unless it is to make a correction or otherwise ensure compliance with existing state and federal regulations and policies. In particular, reaching a consensus on the definition of “localized hot spot” has proven to be difficult. For example, Sacramento Regional County Sanitation District’s “Localized Mercury Bioaccumulation Study” report² provided the two following definitions:

“ **Technical:** The null hypothesis (that there are no spatial or temporal bioaccumulation gradients) is rejected because of a measureable effect of SRWTP effluent. “Rejecting the null hypothesis” is based on a statistical test of the difference between levels measured upstream versus downstream of the outfall. A “significant” difference merely means in this context that the statistical conclusion is highly certain, not that the difference is necessarily large.

AND

² SRCSD. 2008. Localized Mercury Bioaccumulation Study. Final report prepared for Sacramento Regional County Sanitation District (SRCSD) by Larry Walker Associates in association with Applied Marine Sciences, Studio Geochimica, and University of California, Davis. March 2008.

Policy: Evidence of a localized environmental risk is so clear and convincing that a reasonable decision maker would conclude that some action must be taken locally before an offset project could proceed elsewhere.”
[SRCSD, 2008, page 3]

These definitions differ markedly from the USEPA’s 2002 Trading Policy, which states, “EPA believes pilot projects may be appropriate where ... trading does not cause an exceedance of an aquatic life or human health criterion.” Including language that refers to “creation of a localized hot spot” in the draft BPA would likely create confusion, especially as it relates to the USEPA’s Trading Policy. Additional input is needed from USEPA and other stakeholders on how to address this topic. This dialogue can continue during Phase 1 as Board staff and stakeholders continue the effort to develop detailed criteria for offset projects.

None-the-less, the proposed BPA does not and is not intended to take the place of or have any effect on existing state and federal regulations and policies, particularly the USEPA’s Trading Policy. The first principle in the February 2010 draft BPA “Mercury Offsets” section states:

“Offsets should be consistent with existing USEPA and State Board policies and with the assumptions and requirements upon which this and other mercury control programs are established.”

Board staff revised the above draft language to strengthen this intent:

“Offsets ~~should~~ shall be consistent with existing USEPA and State Board policies and with the assumptions and requirements upon which this and other mercury control programs are established.”

USEPA Comment #32.

Principle on Timing and Durability: “Offset credits should be available upon generation (i.e., when an offset project is implemented) and last long enough (i.e., not expire quickly) to encourage feasible projects.”

EPA suggests the Board clarify when a credit will start. EPA strongly believes that credits should only be given after actual reductions of methylmercury loadings have occurred, and not upon implementation of the project. We agree that in order for a project to be feasible, credits must last long enough to be useful, however we strongly caution that credits may not have an infinite timeline, and it may not be permissible to allow them to be carried forward into future permits. EPA’s Trading Policy at page 8 states, “Credits should be generated before or during the same period they are used to comply with a monthly, seasonal or annual limitation or requirement in an NPDES permit.”

Response: The phrase, “when an offset project is implemented”, could be interpreted in a number of ways, for example, to mean when methylmercury reductions are accomplished by an offset project, or when ground is first broken for a project. To avoid confusion, Board staff recommends the removal of the phrase from the draft BPA.

Board staff appreciates USEPA’s caution that credits not have an infinite lifetime, and that it may not be permissible to carry credits forward into future permits. The proposed BPA does not and is not intended to take the place of or have any effect on existing state and federal

regulations and policies, particularly the USEPA's Trading Policy. As noted earlier, staff revised the first principle in the "Mercury Offsets" section to strengthen this intent. As a result, revisions to the draft BPA text, "and last long enough (i.e., not expire quickly) to encourage feasible projects", are not needed at this time.

This dialogue about how to define "not expire quickly" can continue during Phase 1 as Board staff, USEPA and other stakeholders continue the effort to develop detailed guidance criteria for offset projects and the Board evaluates pilot offset project proposals. The above USEPA comments will be critical for that effort.

USEPA Comment #33.

Principle on Measurability (listed in Appendix E): "Alternatives to direct load credits may be developed, such as time extensions to the Final Compliance Date."

In our comment letter dated April 23, 2008, we stated that the use of a time extension through a compliance schedule in lieu of credits does not appear to be consistent with EPA regulations at 40 CFR 122.47, which requires permits to comply with the CWA and regulations as "soon as possible." This principle also appears to be inconsistent with the State Board's CS Policy which requires compliance with WQBELs as soon as possible. We recommend deleting or modifying this provision for NPDES municipal and industrial wastewater discharge sources.

Response: Board staff revised the draft BPA text so that it no longer includes the "such as time extensions to the Final Compliance Date", in order to address USEPA's comments and ensure compliance with federal and state requirements and policies for permit compliance schedules. In response to USEPA's 2008 comments, staff omitted from earlier (two years ago) drafts of the BPA text in the BPA offset program section that would have allowed offset credit to be used to extend compliance schedules. Since then, the BPA offset section were completely re-evaluated and revised by the stakeholder group, and the phrasing appeared again but in a different context. Board staff now realizes that different phrasing was needed to express the intent; that is, an extension to the Final Compliance Date is not needed if approved offset credit is used in lieu of on-site discharge reductions. None-the-less, Board staff removed the phrasing to avoid confusion. This topic can be further explored and defined during Phase 1 when Board staff, USEPA and other stakeholders continue the effort to develop detailed guidance criteria for offset projects and the Board evaluates pilot offset project proposals.

USEPA Comment #34.

Under the discussion of this principle in Appendix E of the Adaptive Management Approach document, the stakeholder group drafted a sub-principle concerning creative solutions: "Creative solutions may be more useful in the near term, such as additional (i.e., beyond required) monitoring, control studies, or exposure reduction efforts." Although EPA understands stakeholder interest in creating incentives for additional monitoring, control studies, and exposure reduction efforts, the offset program is not the appropriate forum to provide incentives for these activities. EPA strongly believes that only actual load reductions (above an appropriate baseline) should be eligible for pollution reduction credits.

Baseline Conditions: The proposed BPA does not appear to include any key principles concerning baseline conditions. However, Appendix E of the Adaptive Management Approach document describes baseline conditions for generating credits for impaired water bodies. Sub-principles include: “Approved, creditable offset projects may be grandfathered into future TMDLs, Basin Plan Amendments and/or permits.”

Grandfathering credits from pre-TMDL projects, after the TMDL is established, would likely be inconsistent with EPA’s Trading Policy, if the pre-TMDL baseline was less stringent. At page 5, the Policy states, “After a TMDL has been approved or established by EPA, the reductions made to generate credits for pre-TMDL trading may no longer be adequate to generate credits under the TMDL. This will depend on the remaining level of reduction needed to achieve water quality standards and, where applicable, the allocation of point and nonpoint source pollutant loads established by the TMDL.” We recommend amending this provision to make grandfathering conditional on a case-by-case basis provided that it is not inconsistent with EPA’s Trading Policy.

(Second) Baseline Conditions: Appendix E also states: “Reductions beyond mandated levels (surplus) should be available to other parties needing credit.”

In our prior work with stakeholders over the past several years, EPA has been supportive of possible offset pilot projects that potentially involved one (or a few) generators of credit and one (or a few) buyers of credit. However, EPA is not supportive of full scale trading for mercury or methylmercury, under which there could be numerous buyers and sellers of credit. EPA has many concerns of such a program; one is that under a full scale trading program, it would be difficult to ensure that all participants would adhere to all the limits and constraints that this document puts on the generation and purchase of credits. EPA is especially concerned that under a full scale trading program, it could be difficult to ensure that all dischargers which purchase credits are protecting water quality in the local area to the same level which would have occurred if the discharger did not purchase credits.

Other Concerns: EPA has more detailed and other concerns not mentioned above. Establishing an offset program for mercury and/or methylmercury and determining appropriate projects is complex. We are committed to working with Board staff and stakeholders to facilitate adoption of a workable offset program and appropriate pilot projects.

Response: Board staff appreciates USEPA’s comments and concerns. To clarify, the Adaptive Management Approach document [a.k.a. MOI or Adaptive Management Plan] is not part of the TMDL/BPA package that will be brought before the Board during the 22 April hearing for consideration for adoption. Development of the Adaptive Management Approach document and detailed criteria for offset projects will continue in Phase 1 with staff working with stakeholders. The above USEPA comments will be critical for those development efforts.

USEPA Comment #35.

Exposure Reduction Program

19. March 1, 2010 Program: On March 1, 2010, the Regional Board noticed a revised proposed Exposure Reduction Program for the BPA at pages BPA 13 and 14. The revised Program outlines the development of an Exposure Reduction Strategy, which will propose who should be responsible for developing and implementing an Exposure Reduction Program, and a process for developing, funding, and implementing the Program. Several objectives for the Program are listed.

We support the development of an Exposure Reduction Program to reduce the actual and potential exposure of Delta fish consumers. We support including all stakeholder groups in its development and implementation, since all sources contribute to the impairment. We strongly support including community based organizations and other organizations that represent Delta fish consumers; they may be able to best evaluate the success of potential exposure reduction actions. Exposure reduction activities may be necessary as long as we have elevated methylmercury levels in fish that are consumed.

We note that subsistence fish consumption values, if determined as part of the program, may not be based on current consumption, if current consumption is reduced due to knowledge of contamination. As noted above in comment I. 3., at the end of Phase 1, we support consideration of appropriate adjustments to the fish tissue objectives, to support higher (subsistence) fish consumption in the Delta.

Response: Staff appreciates USEPA's support for the elements of the Exposure Reduction Program (ERP), particularly to include Delta fish consumers and community-based organizations in the development and implementation of activities. All dischargers are expected to participate, either directly or through a representative. The participation strategy will be determined with dischargers and other stakeholders during Phase 1, as part of the Exposure Reduction Strategy. Staff agrees that exposure reduction activities may be needed beyond the time that the water quality objectives are achieved for people who are eating more than one meal/week of large TL3 and 4 fish. The Basin Plan amendment requests that the State Department of Public Health continue the program after dischargers have met their individual discharge requirements. Staff and stakeholders are developing an Adaptive Management Approach document (a.k.a. AMA, MOI or Adaptive Management Plan) that contains guidance and details for Phase 1 activities. USEPA's comment, that future evaluations should recognize that rates may be biased low due to public outreach, will be placed into the AMA sections that contain guidance for the ERP and the Delta Mercury Program Review.

USEPA Comment #36.

Requirements for Federal Agencies

20. US EPA: The proposed BPA at page BPA 10 states “New wetland, floodplain, and other aquatic habitat restoration and enhancement projects, including but not limited to projects developed, planned, funded, or approved by individuals, private businesses, non-profit organizations, and local, State, and federal agencies such as... U.S. EPA... shall comply with all applicable requirements of this program, including conducting or participating in Control Studies and complying with allocations.”

The proposed BPA at page BPA 15 states that U.S. EPA should work with the State Board to develop a memorandum of understanding to evaluate local and statewide mercury air emissions and deposition patterns and to develop a load reduction program.

We intend to work cooperatively with the Regional Board, State Board, and appropriate Federal agencies on any new projects in which we may in some way be involved, concerning the Delta, in compliance with applicable requirements. We will consider proposals for a memorandum of understanding pursuant to applicable laws and policies.

Response: Board staff appreciates USEPA’s cooperative efforts and expertise for evaluating new projects and developing a memorandum of understanding that complies with applicable laws and policies.

USEPA Comment #37.

III. Modifications to Chapter V (Surveillance and Monitoring)

1. Fish Methylmercury Compliance Monitoring: The proposed BPA at page BPA 16 states that beginning in 2025, the Regional Board will initiate fish tissue monitoring, and thereafter monitor every 10 years, more frequently as needed. Compliance areas in each of the subareas are listed, and details concerning representative fish species and lengths for different trophic levels are included. Minimum sample sets are described.

While we strongly support the compliance program, we recommend fish tissue monitoring begin before 2025 (15 years from now), and more frequently than every 10 years. We recommend fish tissue compliance monitoring on a 5 year basis, and where significant changes in methylmercury or total mercury concentrations or loadings are occurring, on a yearly basis. Changes in methylmercury in fish can vary on a yearly basis. Compliance monitoring on a 10 year basis would not allow the Board to determine whether changes in strategy are necessary, in a timely manner.

Response: Board staff proposes to begin compliance-related fish monitoring after Phase 2 begins and sources have implemented methylmercury reduction projects. More frequent monitoring could be proposed once reduction projects are implemented. The purpose of the proposed BPA text is to describe a state-funded monitoring program to evaluate compliance towards fish tissue objectives. Sources, agencies, and staff are not precluded from conducting additional monitoring to evaluate early load reduction projects. In addition, some permits and projects such as pilot offset projects and restoration projects may want or be required to include more frequent monitoring. Fish tissue monitoring has been included as a requirement in several

recent Clean Water Act Section 401 Certifications for new wetland and floodplain restoration projects. In addition, staff expects that fish mercury monitoring will be a necessary element of CEQA evaluations and implementation plans for future projects with the potential to increase methylmercury concentrations in Delta/Yolo Bypass fish. Also, fish tissue monitoring can be part of any Regional Monitoring Program that is developed. For these reasons, staff does not recommend changing the draft BPA. The compliance monitoring requirements can be re-evaluated during the Phase 1 Program Review and amendments made to the Basin Plan as needed.

USEPA Comment #38.

2. Water Methylmercury and Total Mercury Compliance Monitoring: The proposed BPA at pages BPA 16 and 17 states that sources for irrigated agriculture discharges and for managed wetlands shall develop monitoring strategies (and determine compliance points) for mercury and/or methylmercury as part of their Phase 1 Control Study. NPDES facilities will conduct monitoring for mercury and methylmercury, and as required in their NPDES permits. Similar requirements are included for MS4s.

We support requiring these sources to develop reasonable and appropriate monitoring strategies as part of their Phase 1 studies or as part of their NPDES permit. We expect that monitoring frequencies will be consistent with the need for data as part of their Control Study to determine appropriate control actions.

Response: No response needed. Board staff appreciates USEPA's comments.

2. U.S. Department of Interior Bureau of Reclamation (USBR)

Michelle H. Denning (Regional Planning Officer, Mid-Pacific Regional Office)
Letter Date: 7 April 2010

USBR Comment #1.

The Bureau of Reclamation, Mid-Pacific Region has reviewed the subject report. Reclamation recognizes this report is a draft and appreciates the opportunity for review. Our main concerns are summarized as follows:

- Reclamation must conduct flood control operations in accordance with the mandates of other agencies such as the U.S. Army Corp of Engineers, and does not have the sole discretion to deviate from these criteria.
- Reclamation must operate its facilities in accordance with the terms and conditions of its water permits and licenses. To operate the Central Valley Project (CVP) in a manner to meet the methylmercury standard may result in violations of these terms and conditions.
- Reclamation operates the CVP to provide fishery flows in accordance to the Central Valley Project Improvement Act. These flows are determined by other agencies such as the U.S. Fish and Wildlife Service, and the California Department of Fish and Game.

We look forward to working with you to find a viable solution regarding these concerns. If you have any questions, please feel free to contact Gene Lee, Regional Water Quality Coordinator at 916-978-5092, or Paul Fujitani, Chief, Water Operations, at 916-979-2197.

Response: Responses to each of these main concerns is provided below, in the responses to the detailed comments.

USBR Comment #2.

Comments on the Central Valley Regional Water Quality Control Boards Draft Basin Plan Amendment for the Control of Methyl and Total Mercury in the Delta April 7, 2010

Reclamation submits the following comments for “Amendments to The Water Quality Control Plan for the Sacramento and San Joaquin River Basins for The Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary” (February 2010 - Public Review Draft)

Comments:

1. Characterization and Control Studies

Phase 1 of the total maximum daily load (TMDL) requires responsible parties to evaluate methyl and total mercury concentrations and loads in source and receiving waters and discharges, identify variables that control methylmercury production, and propose management practices and implementation schedules to reduce methylmercury loads and concentrations.

Response: This comment appears to be referring to the February 2008 draft Basin Plan Amendment (BPA). The February 2010 draft BPA does not reference the characterization studies, but requires methylmercury Control Studies during Phase 1. Dischargers may conduct characterization studies as needed to inform and prioritize the methylmercury Control Studies. In addition, the February 2010 draft BPA does not specifically require characterization studies for receiving waters.

USBR Comment #3.

The time schedule to complete Phase 1 is very optimistic in regards to the level of effort required and available resources. Reclamation does not have the technical expertise to perform such studies nor the ability to propose potential management strategies to reduce methylmercury loads. The acquisition of necessary funds to perform such a study may require Congressional authorization which is a lengthy process and not guaranteed.

Response: Staff believes that the Basin Plan amendment provides a reasonable amount of time to obtain funds and design and conduct the studies. If additional time is needed, the Basin Plan Amendment allows the Executive Officer to extend a study's deadlines up to two years under certain conditions and then allows the Central Valley Water Board to extend the Final Compliance Date two years to accommodate the time extension for the studies.

USBR Comment #4.

In regards to the sulfate portion of the study, how definitive is the linkage between sulfate concentration and methylmercury production? Your analysis states there is a connection between sulfate concentration and methylmercury production. However, your data shows that the Sacramento River Basin has a lower sulfate concentration than the San Joaquin River Basin, but the methylmercury concentration is higher in the Sacramento River Basin. A related question is how does the X2 position relate to sulfate concentration and methylmercury production? If seawater has a sulfate concentration of approximately 800ppm, methylmercury in the Bay should be correspondingly high.

Response:

Board staff assumes these comments refer to Section 3.1 "Sulfate" in Chapter 3 of the February 2010 draft TMDL Report. Chapter 3 provides a literature review of potentially controllable methylmercury production and degradation processes in the Delta. Section 3.1 describes how the sulfate concentration of ambient water can potentially affect methylmercury levels; please refer to Section 3.1 for citations for the following summary material. Methylmercury is mostly made by sulfate reducing bacteria. Sulfate is used by sulfate reducing bacteria as the terminal electron acceptor in the oxidation of organic material. Sulfate additions in amendment studies have been observed to both stimulate and inhibit methylmercury production. Section 3.1 identifies two potentially controllable factors that influence sulfate concentrations in the Delta, the water quality objectives for electrical conductivity (EC) (which is primarily a function of freshwater outflow and seawater intrusion) and the ratio of San Joaquin River to Sacramento River water. The footnote notes that sulfate concentrations in the Sacramento and San Joaquin Rivers varied between 6-14 and 42-108 mg/l, respectively, in 2000 and 2001 (Foe, 2003) while full strength seawater is 2,700 mg/l (Parsons and Takahashi, 1973). San Joaquin River water

has higher sulfate concentrations than the Sacramento River, and seawater is higher than both rivers.

To clarify, this section does not attempt to draw a direct connection between sulfate concentrations and methylmercury production in the Delta. As summarized at the beginning of Chapter 3, there are many sediment factors and landscape events important in net methylmercury production and loss, including:

- Sulfate and pH concentration of the overlying water;
- Percent organic content of the sediment;
- Creation of new water impoundments;
- Amount and kind of inorganic mercury present in the sediment;
- Amount of permanent or seasonally flooded wetland in a watershed;
- Deposition of particle-bound methylmercury in the water column; and
- Photodegradation of methylmercury in the water column.

Staff stated at the end of Section 3.1, “Sulfate amendment studies need to be undertaken with sediment collected throughout the year from the southern, central and western Delta to determine whether the sulfate concentration in the overlying water affect methylmercury production in sediment.” Changes in how water masses (Sacramento River, San Joaquin River, and seawater) are mixed in the Delta may have profound effects on the amount of methylmercury produced by sulfate reducing bacteria in sediment in open water areas of the Delta. This could lead to large changes in the mercury concentration in fish tissue. It is likely that some hydrologic changes in the Delta may exacerbate methylmercury production while others could have negligible effects. The state of the mercury science is such that we cannot predict the outcome without follow up studies.

That said, data presented in Chapters 4, 6 and 7 from fish and ambient water column sampling in the Delta indicate higher average water methylmercury and suspended sediment total mercury concentrations and fish methylmercury concentrations in the western Delta than in the Central Delta. However, that increase could be the result of multiple factors, e.g., increasing sulfate concentrations in water due to tidal flux from the Suisun and San Pablo Bays, or because the amount of inorganic mercury in surface sediment in the Bays (which supplies methylation production in the sediment) is higher than in the Central Delta (see Section 7.4.1 in the TMDL Report), or because there are extensive wetland complexes surrounding Suisun Bay (see Figure 6.4 in the TMDL Report), or some combination of these and other factors. In addition, the fish and water mercury increases may not be as high as predicted from seawater intrusion sulfate concentrations alone if sulfate is not a limiting factor for sediment microbial activity and/or if other loss processes (e.g., increased photodegradation of methylmercury in the water column due to increased residence time) occur at the same time as production processes, affecting the net water column methylmercury concentrations.

USBR Comment #5.

Flood Conveyance Flows, Water Management Storage, and Storage

The TMDL states that changes in flood conveyance, water delivery to, diversions from, or storage in the Delta, and salinity standards or flow management practices used to maintain current salinity standards could affect methyl and total mercury loading in the Delta.

However, the Central Valley Project is operated to meet numerous projects and permit objectives, including water supply, flood control, protection of fish and wildlife, and power generation. Our operational requirements do not allow for much flexibility and it is unlikely that we would be able to significantly alter our water operations without conflicting with other project requirements. For example, our flood operations at Folsom, Shasta and New Melones Reservoirs are determined by criteria established by the U.S. Army Corps of Engineers (COE). If Reclamation reduced reservoir releases during periods of flood control for mercury purposes, then we would be in violation of the COE flood control criteria and may have potential impacts on public safety.

The fishery agencies determine when and what volume of releases they would like to have for instream flow benefits. The Central Valley Project Improvement Act (CVPIA), 3406(b)(2) authorizes the US Fish and Wildlife Service (FWS) to dedicate and manage up to 800 taf of project yield for anadromous fishery restoration. To a large extent, fishery restoration actions usually take the form of increased instream releases. The California Department of Fish and Game (DFG) have minimum instream release requirements on both the American River and the Stanislaus River. Reclamation does not have the liberty to make river releases less than the minimum required in the DFG agreements.

On the San Joaquin River, Reclamation is required to make releases from some source (currently New Melones Reservoir) to meet the Vernalis salinity requirements and Vernalis flow objectives. These releases are required under SWRCB D-1641. Again, Reclamation does not have any flexibility to reduce releases to benefit (reduce) methylmercury loading.

In regards to salinity control and the X2 standard, D-1641 mandates Reclamation to meet the X2 standard as a condition of its permit. As such, Reclamation does not have any flexibility on this standard.

While power production is an incidental benefit to water operations (e.g. When Reclamation operates to our water and permit obligations, power generation is an incidental benefit), if reservoir releases were reduced over a long period, there could be a large energy supply impact to the State of California, with corresponding economic and financial impact.

Reclamation may only have a small impact on flows entering the Yolo Bypass and other floodways. A large percent of the flow in the system under winter high flow conditions originates from other non-project streams and unregulated flows. These floodways also serve an important role in protecting other lands and property.

Response: Per the BPA, activities including water management and impoundment in the Delta and Yolo Bypass, maintenance of and changes to salinity objectives, dredging and dredge materials disposal and reuse, and management of flood conveyance flows are subject to the open water methylmercury allocations. The BPA proposes that agencies, including USBR,

conduct the Phase 1 methylmercury control studies for their activities that have the potential to increase ambient methylmercury levels. These agencies may conduct their own coordinated Control Studies or may work with the other stakeholders in comprehensive, coordinated Control Studies.

Staff acknowledges that all of the water agencies have mandates and strict operating criteria for flows, water supply, flood protection, wildlife protection, and power generation. The draft BPA does not require agencies to start changing their water management operations for control of mercury and methylmercury during Phase 1. The BPA does require that the agencies evaluate those water management activities and determine if there are feasible management practices that could be implemented to reduce mercury and methylmercury levels. The results of the Phase 1 studies will be evaluated at the end of Phase 1 and the Board will consider modifications to the BPA requirements based on the study results. Staff worked with stakeholders during the formal stakeholder process after the April 2008 hearing meeting to develop the below text to address stakeholder concerns regarding the balancing of methylmercury controls and other competing water quality, flood control and ecosystem issues:

"By [nine years after Effective Date] at a public hearing, and after a scientific peer review and public review process, the Regional Water Board shall review and reconsider, if appropriate, the Delta Mercury Control Program and may consider modification of objectives, allocations, implementation provisions and schedules, and the Final Compliance Date." (page BPA-8)

"The Regional Water Board shall assess: (a) the effectiveness, costs, potential environmental effects, and technical and economic feasibility of potential methylmercury control methods; (b) whether implementation of some control methods would have negative impacts on other project or activity benefits; (c) methods that can be employed to minimize or avoid potentially significant negative impacts to project or activity benefits that may result from control methods; (d) implementation plans and schedules proposed by the dischargers; and (e) whether methylmercury allocations can be attained." (page BPA-9)

Implementation of methylmercury management practices identified in Phase 1 is not required until Phase 2. It would be overly speculative to attempt to evaluate potential effects of implementation activities conducted during Phase 2 of the proposed control program on power production associated with reservoir releases until the Phase 1 studies have been completed. Potential negative effects of methylmercury controls on power production can be a factor to be evaluated as part of the Phase 1 methylmercury control studies.

The potential effects on methylmercury and total mercury inputs to the Delta and Yolo Bypass need to be another consideration when operational changes are evaluated for the state and federal projects.

USBR Comment #6.

Agricultural Lands Wetlands

The TMDL control program applies to agricultural lands and wetlands in the Delta and within 30 miles of the Delta. Although Reclamation does not own or operate any wetlands, Reclamation is obligated under CVPIA to convey and provide water to wildlife refuges. The volume and timing of these deliveries are determined by the refuge managers.

Reclamation believes the development of wetlands in the Delta is an important component of the CALFED Ecosystem Restoration Program. The proposed control program would appear to prevent or create additional obstacles for wetlands restoration.

Response: To clarify, the 30-mile boundary for the TMDL was a component of the June 2006 version of the TMDL. The TMDL scope has since changed in response to stakeholder comments. The scope of the February 2010 BPA allocations is the legal Delta and the Yolo Bypass. Managers of wetlands within the Delta and Yolo Bypass have responsibilities for methylmercury produced by those wetlands under this BPA and are required to conduct the methylmercury studies. The BPA recommends that the water, wetland, and agricultural managers coordinate their studies to develop comprehensive workplans and studies to evaluate methylmercury from lands immersed by managed flood flows. Note, many of the draft BPA requirements for wetlands are baseline requirements for wetlands constructed under the CalFed Bay-Delta Program, which recognized in its programmatic ROD CEQA documentation that potential methylmercury production by its wetland restoration projects is a potentially adverse environmental impact that requires the development and implementation of mitigation strategies.

It is not staff's intent to develop a control program that prevents or creates additional obstacles for beneficial projects, such as wetlands restoration and management. At the same time, the federal Clean Water Act requires states to identify water bodies that do not meet their designated beneficial uses and to develop programs to eliminate impairments. Also, with fewer wetlands now than historically, it is more important now than ever that existing and restored wetlands be of the highest quality to better sustain wildlife species of concern, which includes not having harmful levels of pollutants such as methylmercury. Concentrations of methylmercury measured in Delta fish are above levels observed in field and laboratory studies elsewhere that harm wildlife species. For example, the highest fish tissue levels observed in the Delta were in the lower Cosumnes River (Davis *et al.*, 2008; Slotton *et al.*, 2007¹), an area of intensive wetland restoration efforts. Extensive multi-year and seasonal fish mercury monitoring conducted in the lower Cosumnes River after the development of the TMDL source analysis observed small fish mercury levels that were 5 to 29 times the small fish mercury objective proposed in Chapter 3 of the draft Basin Plan Amendment report (Slotton *et al.*, 2007). Slotton and others (2007, pages 58-59) observed extreme (400-500%) increases in silverside mercury

¹ Davis, J.A., B.K. Greenfield, G. Ichikawa, and M. Stephenson. 2008. Mercury in sport fish from the Sacramento San Joaquin Delta region, California, USA. *Science of the Total Environment*, 391:66-75.

Slotton, D.G., S.M. Ayers, and R.D. Weyland. 2007. CBDA Biosentinel Mercury Monitoring Program, Second Year Draft Data Report Covering Sampling Conducted February through December 2006. May 29, 2007. Available at: <http://www.sfei.org/cmr/fishmercury/DocumentsPage.htm>

at the Cosumnes site in July 2006, when concentrations in 45-75 mm (2-3 inch) silversides reached levels averaging an “astounding” 0.869 ppm, with individual fish as high as 2.0 ppm. According to the authors, “these were concentrations that should be of serious concern, particularly in relation to wildlife exposure.” A goal of the Phase 1 studies is to develop methods of reducing methylmercury that do not impair the function of open water and wetland habitats so that existing and restored habitat is of high quality for sustaining populations of wildlife species of concern.

The February 2010 draft staff reports review the current state of knowledge on the role of wetlands in generating methylmercury. There are about 21,000 acres of freshwater emergent wetlands in the Delta and Yolo Bypass. The Record of Decision (ROD) for the California Bay-Delta Authority commits it to restore 30,000 to 45,000 acres of freshwater, emergent tidal wetlands, 17,000 acres of freshwater, emergent non-tidal wetlands, and 28,000 acres of seasonal wetlands in the Delta by 2030 (CalFed Bay-Delta Program, 2000a & 2000c). This represents about a three to four times increase in wetland acreage from current conditions. Much of the restoration is expected to take place in the Yolo Bypass, Cosumnes/Mokelumne, Marsh Creek and San Joaquin TMDL subareas, areas that require substantial reductions from existing methylmercury sources to achieve the proposed fish tissue objectives. These areas are also downstream of major sources of mercury-contaminated sediment.

Even though much of the research has found that wetlands act as sources of methylmercury, recent data indicate that some wetlands may act as net methylmercury sinks (that is, more methylmercury enters the wetlands than leaves). These patterns indicate that it will likely be feasible to control methylmercury from some wetland sources through design, management, and control options. Control studies have already begun to evaluate potential methylmercury management practices at wetlands in the Yolo Bypass. More methylmercury control studies would take place during Phase 1, as proposed by the draft BPA.

Chapter 7 (“CEQA Environmental Checklist and Discussion) in the February 2010 draft Basin Plan Amendment Staff Report (see Section IV, subsections B & C in particular) provides a program-level review of potentially negative impacts on wetland habitats that might be associated with implementation of methylmercury management practices during Phase 2. The CEQA evaluation identified the concern that modifying wetland vegetation and/or hydrology to reduce methylmercury loading to surface waters has the potential to affect the function and attractiveness of a given wetland to target species, and also identified foreseeable ways to minimize or avoid negative effects on wetland function:

- Implement only those onsite management practices that do not change the desirable wetland functions. The Phase 1 studies are expected to develop measures to reduce methylmercury discharges and resulting bioaccumulation while still optimizing management of the wetlands as habitat for desired species and other desirable functions. Phase 1 methylmercury studies can and should be coordinated with researchers’ and wetland managers’ efforts to conceptualize and quantify the environmental impact and cost of various hydrologic management scenarios on flow and salt load discharges and other efforts to address dissolved oxygen and other existing and potential water quality concerns in the greater Delta region.
- Reduce upstream methylmercury sources and/or sources of mercury-contaminated sediment that supply the wetland sites in that subarea.
- Participate in an offset program (if one is approved by the Central Valley and State Water Boards and USEPA).

As noted in the staff's response to USBR Comment #5, Board staff worked with stakeholders during the formal stakeholder process after the April 2008 hearing meeting to develop BPA language to address stakeholder concerns regarding the balancing of methylmercury controls and other competing water quality, flood control and ecosystem issues during the Phase 1 Program Review, as well as language that explicitly states that implementation of methylmercury management practices identified in Phase 1 would not be required for the purposes of achieving methylmercury allocations until the Board has completed the Phase 1 Program Review, which will include a public process. Based on information generated during Phase 1, the Board can consider modifying the load and waste load allocations and implementation provisions and schedules among other elements of the Delta Mercury Control Program, if appropriate.

USBR Comment #7.

4. Economic Analysis on Benefits

The staff report did not adequately address the impact this TMDL will have on other competing water management interests such as flood management, salinity control, providing fishery flows, and creation of wetland habitat. A detailed and comprehensive benefit analysis should be performed to adequately evaluate the benefits and tradeoffs this mercury control program would have on other beneficial uses including public safety.

The February 2010 Basin Plan Amendment and TMDL Staff Reports include all elements required under State and Federal laws and regulations for the adoption of water quality control plans. Water Code section 13241 requires that the Central Valley Water Board factor in "[e]conomic considerations" when establishing water quality objectives. Public Resources Code section 21159 requires that the Central Valley Water Board "perform, at the time of the adoption of a rule or regulation requiring the installation of pollution control equipment, or a performance standard or treatment requirement, an environmental analysis of the reasonably foreseeable methods of compliance. In the preparation of this analysis, the agency may utilize numerical ranges or averages where specific data is not available; however, the agency shall not be required to engage in speculation or conjecture."

The Commenter is referred to Section 3.2.4 of the Basin Plan Amendment Staff Report for a discussion of economic considerations relevant to the Central Valley Water Board's section 13241 analysis. This discussion satisfies the requirements of Water Code section 13241, which does not dictate that the Board undertake a cost/benefit analysis of the type requested by the Commenter. Furthermore, in prior decisions interpreting Water Code section 13241, the courts have opined that "[t]he plain language of ... [section] 13241 indicates the Legislature's intent in 1969, when these statutes were enacted, that a regional board consider the *cost of compliance...*" (Italics added), and does not mention that these costs must be compared to the relative benefits provided by the Board's action. City of Burbank v. State Water Resources Control Bd. (2005) 35 Cal.4th 613, 625.

Moreover, the Central Valley Water Board's consideration of environmental impacts associated with the reasonably foreseeable methods of compliance pursuant to Public Resources Code section 21159 includes impacts that fall within the scope of the Commenter's remarks. The Commenter is referred to Chapter 7 of the Basin Plan Amendment Staff Report for a detailed analysis of the environmental impacts including a discussion of alternatives and mitigations that

may be used to reduce or eliminate the impacts and to Section 7.4 of the Basin Plan Amendment Staff Report for a discussion of economic considerations associated with the reasonable foreseeable methods of compliance.

3. California Department of Water Resources & Central Valley Flood Protection Board

Letter Date: 7 April 2010

Dale K. Hoffman-Floerke
Deputy Director
Department of Water Resources

Jay S. Punia
Executive Officer
Central Valley Flood Protection Board

DWR Letter Comment #1

The Department of Water Resources (DWR) and the Central Valley Flood Protection Board (Flood Board) (collectively, "Agencies") submit these joint comments on the proposed Basin Plan Amendment (BPA) and associated February 2010 Staff Report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin Delta Estuary (Delta) (Staff Report). The Agencies appreciate the opportunity to review and comment on these documents which set forth the proposed Delta Mercury Control Program and regulations for implementing a Total Maximum Daily Load (TMDL). The Agencies provide general comments below and specific comments in the attached Table (Attachment 1). The Agencies have also attached a "redline" edit of the proposed BPA (Attachment 2) to reflect possible changes that may address many of our concerns expressed in our comments. Although the Agencies provide suggested changes now, we may have additional comments at the Central Valley Regional Water Quality Control Board (Regional Water Board) hearing on April 22.

DWR and the Flood Board would like to emphasize our support of the Regional Water Board taking necessary steps to identify methods to control methylmercury in the Delta. The newly proposed designated beneficial uses of commercial and sport fishing in the Delta are important uses that need to be addressed in order to protect human health and fish and wildlife. We support certain portions of the Regional Water Board's proposed BPA and TMDL for controlling both methyl and total mercury to reduce fish tissue values to levels that are safe for both fish and wildlife and Delta anglers. For example, the Agencies agree that studies to identify actions to reduce production of methylmercury from dredging, wetland, and aquatic habitat restoration activities should be undertaken. DWR and the Flood Board look forward to working with the Regional Water Board to further refine such actions.

Response to DWR Letter Comment #1

The Central Valley Water Board appreciates the support of DWR and the Flood Board and also looks forward to working together. Staff agrees with DWR that it is important to conduct the methylmercury control studies for dredging activities and wetland and aquatic habitat restoration activities.

DWR Letter Comment #2

However, the Agencies continue to have significant concerns with certain aspects of the proposed BPA and TMDL. As we have expressed previously during the development of the BPA, the Agencies have concern with Phase 1 improvement actions proposed for the Cache Creek Settling Basin (CCSB). The BPA and TMDL continue to characterize the CCSB as a major source of mercury entering the Delta; however this assertion is incorrect. The Cache Creek watershed is the source of mercury, not the CCSB. The CCSB is a federal Flood Control facility of the Sacramento River Flood Control Project designed with the sole purpose of capturing sediment to minimize downstream flood impacts of sediment on the Yolo Bypass, Sacramento River, the Delta, and the San Francisco Bay. This structure is intended to reduce flooding in the downstream water bodies by minimizing sediment input from the Cache Creek Watershed into those water bodies. The CCSB, by the nature of its sediment capture role, has been and continues to capture mercury entering the basin from the Cache Creek watershed. The BPA and TMDL attempt to reallocate the purpose of the CCSB from single purpose flood control (as designed by the USACE) to multipurpose uses, including increased sediment and mercury capture, above and beyond the design of the flood control feature. Such a change was not envisioned in the federal authorization for the CCSB, and this BPA/TMDL change may not be in the federal interest. We describe these concerns and propose revisions to the BPA in specific comments in Attachments 1 and 2.

Response to DWR Letter Comment #2

Staff recognizes that the Cache Creek watershed is the source of mercury that is now trapped in the Settling Basin and agrees that the Settling Basin is not the source of mercury. It is an engineered structure that regulates the flow of sediment into the Yolo Bypass. Regardless of the purpose of the Settling Basin, the Basin's presence and how it is operated and maintained affects the transport of methylmercury and inorganic mercury from Cache Creek to Yolo Bypass. Therefore, it is important that agencies that have responsibility for managing the Basin take precautions to limit the discharges of methylmercury and inorganic mercury. Staff is proposing revisions to the implementation provisions for the Settling Basin to allow a study period that would coincide with the Phase 1 requirements for other sources. The draft Basin Plan amendments (BPA) require the agencies to implement a plan for management of contaminated sediment in the Settling Basin. The draft BPA requires the agencies to start working with the Army Corps of Engineers to get Congressional authorization to work on the Settling Basin and sets a schedule for the agencies to evaluate options and feasibility, and provide a plan to reduce mercury loading from the Settling Basin. Implementation of the plan would begin in Phase 2.

DWR Letter Comment #3

In addition, DWR and the Flood Board have fundamental policy, legal, and technical concerns with the joint assignment to our agencies, along with the State Lands Commission (SLC), of the open water allocation as a method to reduce mercury in the Delta. The proposed BPA states that "[o]pen water allocations apply to the methylmercury load that fluxes to the water column from sediments in open-water habitats within channels and floodplains in the Delta and Yolo Bypass." (BPA at 10.) The Agencies believe that it is unreasonable and inappropriate to include the open water allocation as described in the BPA, or to place the burden to meet such an allocation solely on three State agencies. The major source of this methylmercury loading is the mercury-laden sediment underneath the waters that was deposited many years ago from natural and human activities unconnected to activities of these State agencies. We instead recommend that the Regional Water Board recognize this as a Statewide problem that should be remedied through a characterization and control program and not through the use of a TMDL targeted at these three agencies.

Response to DWR Letter Comment #3

The Board has assigned joint responsibility to the three state agencies for the open water allocation because these agencies share responsibility for the management of the water running through Delta channels and floodplains and management of the lands underlying these channels and floodplains. As such, it is appropriate for the Board to assign these agencies the responsibility to study the impact that their activities have on the generation of methylmercury in these channels and floodplains, and to implement control actions that reduce the generation and transport of methylmercury in these waterbodies. Staff has added language to the proposed BPA indicating that the Board will add other responsible parties, as appropriate, at any time in the future when they are identified.

DWR Letter Comment #4

We do not believe it is appropriate to characterize DWR, the Flood Board and SLC, collectively, as the "State of California" when assigning the open water allocations. In providing the rationale for assigning the open water allocations to the Agencies, the Regional Water Board staff stated that placing a more upfront and immediate burden on the State government was "in keeping with stakeholder requests" and referenced an April 9, 2008 comment letter signed by various parties ("Comment Letter," attached as Attachment 3). (See also Draft BPA Staff Report at 61, footnote 26.) The major position put forward in the Comment Letter is that substantial mercury load reductions and study requirements should be allocated to the State of California. The letter states that the primary source of methylmercury loading is the sediment underneath the State's waters and, because the People of California own the waters, the State should be held accountable for reducing these loads. (See Comment Letter at 1.)

Response to DWR Letter Comment # 4

The assignment of load allocations to the State was included because State agencies implement actions that have an impact on the generation and transport of methylmercury. In DWR Letter Comment #9 and DWR Attachment Comment #20, DWR suggests that the State Water Board should be the lead funding agency, and that legislation would be the appropriate vehicle for establishing and funding a mercury characterization and control program because the State as a whole should be responsible. These comments support the concept of assigning load allocations to the State.

While the mercury sources include both naturally occurring mercury and legacy sources related to mining activities, activities conducted by land management agencies transport and/or concentrate total mercury and can affect methylmercury concentrations. Since these agencies are the experts on these activities, and because these agencies permit and manage these activities, it is reasonable for the Board to compel these agencies to evaluate the practices that are feasible under their land management mandates to reduce the concentrations and loads of total and methylmercury. Staff believes that it is appropriate to assign the load allocations to the specific agencies that have jurisdiction over land as the responsible parties. The draft BPAs have been revised to allow other responsible parties to be added to the allocations as they are identified in Phase 1.

DWR Letter Comment #5

The Regional Water Board staff responded to this position by assigning the open water allocations to the three state agencies, with the apparent belief that the State's responsibility would be appropriately fulfilled by those agencies. DWR and the Flood Board do not dispute that some of our activities, such as dredging or wetland and aquatic habitat restoration, may affect methylmercury production in the open-water. However, we strongly oppose being solely responsible for meeting the open water allocations simply because we are State agencies.

Importantly, DWR and the Flood Board do agree with the rationale in the Comment Letter for the State responsibility due to mercury contamination as an unfortunate legacy for our State. Mercury is abundant in naturally occurring minerals and rocks of the California Coast Range and Sierra Nevada, which will continue to erode and be deposited in the State's water bodies through natural processes, atmospheric deposition, as well as from anthropogenic activities (primarily historic mercury mining concentrated in the Coast Range, and gold recovery concentrated in the Sierra Nevada foothills and eastern valley). To address this legacy issue, which affects the citizens of California as a whole, the Agencies believe a comprehensive mercury characterization and control program identified with appropriate legislative authority to fund and staff a statewide effort is required. Until such a comprehensive, legislatively authorized and funded approach is developed, the Agencies do not support portions of the proposed BPA that hold them responsible for reducing methylmercury that is not caused by our activities. The Agencies have attached an edited BPA with comments and proposed changes reflecting this position.

The Agencies also believe that the proposed BPA open water allocations narrowly assign responsibility to only State agencies, and that when using the underlying logic of the BPA, federal agencies also should be assigned responsibility. The proposed BPA describes the types of activities that will be subject to the open water methylmercury allocations, including "water management and storage in and upstream of the Delta and Yolo Bypass, maintenance of and changes to salinity objectives, dredging and dredge materials disposal and reuse, and management of flood conveyance flows." (See BPA at 10.) The BPA then identifies the agencies that are responsible for the various activities, including DWR, SLC, the Flood Board, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers and the State Water Resources Control Board (State Water Board). However, despite recognizing that there are numerous other agencies responsible for the types of activities affecting open-water methylmercury production and transport, the proposed BPA assigns responsibility to meet the allocations to only the three State agencies. We believe this is arbitrary and unreasonable.

Another reason to modify the open water allocation is that it assigns the responsibility to meet the allocations before any real analysis has been performed to assess whether the Agencies can feasibly and reasonably reduce methylmercury production in the open water. We believe it is highly unlikely that Agencies will be able to accomplish the methylmercury reductions in a manner envisioned in the BPA.

Response to DWR Letter Comment #5

Staff agrees that the methylmercury that is generated in the open waters of the Delta is in general the result of inorganic mercury in the sediment of the Delta channels and that a substantial portion of that mercury likely comes from historic mining activities. However, water management activities can influence how much methylmercury is generated at a particular site. Staff has provided additional clarification in the draft BPA that the requirements apply only to activities that can influence how much methylmercury is generated in the open channels in the Delta (not upstream). Also, the BPA includes an adaptive management framework (lasting seven years) that describes how Board staff intends to work with DWR and others prioritizing and implementing studies to determine how land and water management activities affect methylmercury. If, during the adaptive management phase, the Board receives information indicating that none of DWR's actions significantly influence methylmercury production in the

open channels, then no control actions will need to be undertaken. The adaptive framework purposely does not include many details because, after numerous discussions, stakeholders agreed that flexibility was desirable. The Central Valley Water Board will assign responsibility for the open water loads to other parties if and when they are identified during the adaptive management process (Phase 1, seven years). Other parties that are identified do not have to be State agencies.

Staff agrees that, at this time, all the management measures that can achieve the open water allocations are unknown. That is the purpose of the studies that are required. However, there is information relevant to what kinds of actions can be done. For example, any activity that lowers the concentration of mercury in Delta channel sediments should lower the amount of methylmercury that is produced from the sediment. Managing the Cache Creek Settling Basin to trap mercury enriched sediment will lower the concentration of mercury in the sediment in Yolo Bypass and lower the concentration of methylmercury in the water. Another possible action is to remediate areas in the Yolo Bypass with elevated mercury in sediment concentrations. A soon-to-be released study evaluates sediment mercury concentrations in the Yolo Bypass. Changes in water residence time in Delta channels that result from changes in diversion points of major water projects and other water management activities could influence methylmercury production and loss processes in the Delta. These changes in water management should not occur without consideration of their impact on methylmercury levels in the Delta. The allocations apply to the net methylmercury loads (BPA Table A).

Methylmercury control studies continue to be required during the adaptive management phase (Phase 1), but the requirement to implement management measures before completion of the studies has been deleted and replaced with the recommendation that DWR and others consider implementing appropriate management practices during Phase 1. In addition, there are several editorial and clarification revisions that Board staff is proposing to the draft BPA.

DWR Letter Comment #6

To properly develop the BPA, the Regional Water Board staff must: 1) conduct an analysis as to whether the fish tissue objective set forth in the BPA can reasonably be achieved; 2) analyze the reasonably foreseeable environmental impacts from the methods of compliance, the reasonably foreseeable mitigation measures, and the reasonably foreseeable alternative means of compliance; and 3) design a program that includes actions that can be reasonably and feasibly implemented. (See Public Resources Code Section 21159(a) and Water Code Section 13241.) The Regional Water Board staff analysis, however, is not adequate to meet this requirement. The Regional Water Board staff identified a few methods of compliance with the open water allocations but these methods focused only on the reduction of total mercury inputs from upstream sources in order to decrease sediment mercury concentrations in the open channels. (See Staff Report at 110, 115-117.) The analysis is unclear as to the Agencies effect on upstream sources of mercury and does not sufficiently analyze whether the Agencies can feasibly or reasonably reduce methylmercury levels in the open-waters. We believe that one of the main purposes for the Phase 1 studies is to determine the feasibility of control actions that can reduce mercury loading and methylmercury production. As such, DWR and the Flood Board believe assigning responsibility to specific entities for the open water allocations is premature when there is little evidence in the analysis showing feasible or reasonable actions to achieve such allocations.

Response to DWR Letter Comment #6

Staff disagrees with DWR's comment that the documentation for the BPA does not address the requirements of Public Resources Code section 21159 and Water Code section 13241.

Staff has conducted an analysis of whether the fish tissue objectives can reasonably be achieved. In the analysis, staff looked at global mercury cycling, background concentrations of mercury, current and projected sources of mercury, activities that could be implemented to reduce mercury loads and interrupt the methylmercury cycle, fish consumption statistics, health risks to consumers, fish tissue targets developed in for San Francisco Bay and other areas and many other factors. Staff concluded that the proposed fish tissue objectives could reasonably be achieved, were consistent with targets developed for San Francisco Bay and offer protection for a majority of the people.

In terms of implementing projects, the Central Valley Water Board cannot specify the method of compliance with allocations. Neither the Public Resource Code section 21159 nor the Water Code section 13241 require that the Central Valley Water Board provide an exhaustive analysis of all potential compliance measures. In their analysis, staff evaluated a suite of practices that could be implemented to achieve desired load reductions. Staff believes that the analysis in the Basin Plan Staff Report is adequate to meet the requirements of Section 13241 of the Water Code. Part of the purpose of the Phase 1 control studies is to develop better information on cost and feasibility.

DWR Letter Comment #7

The last, and extremely important issue the Agencies have with the open water allocations is that it improperly includes flood control and "water management" as activities that are subject to the open water methylmercury allocations. The Agencies interpret the term "water management" to mean activities related to the movement of flows through confined, established Delta conveyance tributaries and channels. Such flow is subject to, and largely the result of, precipitation, snow melt, and other natural processes. Movement of water through the fluvial system will occur regardless of flood control and water management activities and DWR and the Flood Board do not believe that the mere movement of water through established channels should be included in an open water allocation, or any other allocation. The Agencies understand that water management activities may affect the distribution and potentially the resident time of mercury and methylmercury. However, we do not agree that affecting the distribution of methylmercury should be, or legally can be, considered a loading factor.

The "water management activities" described in the BPA cannot be considered point sources or nonpoint sources because they do not add any pollutant to navigable waters, and therefore cannot be regulated in the manner proposed in the BPA. The Regional Water Board staff seem to acknowledge this on page 50 of the Staff Report, which states, in pertinent part: "There are several challenges in developing equitable and effective methylmercury allocations...TMDL regulations and guidance focus on controlling discharges of pollutants to address water quality impairments, and do not clearly address how to handle other contributing factors such as water management activities." In other words, the Regional Water Board staff recognized that water management activities do not discharge mercury or methylmercury into the State's water bodies, which is what a TMDL is designed and intended to address. Therefore, the open water allocations set forth in the BPA pertaining to activities that only affect flow in the Delta channels should not be addressed through a TMDL.

Response to DWR Letter Comment #7

The open water allocations apply to flood control and water management activities because their activities have the potential to influence how much methylmercury is generated in open water areas, not merely the distribution of methylmercury, as the Commenter contends. If, during the adaptive management period (Phase 1), DWR submits new information, and the

Central Valley Water Board agrees, that there are no activities that are being implemented or proposed that could influence methylmercury production, then no in-depth studies are needed.

DWR comments that the water management activities cannot be considered point sources or nonpoint sources, and therefore cannot be regulated by a BPA. The Commenter misreads the federal regulations pertaining to the establishment of a TMDL, which considers a TMDL to be “[t]he sum of the individual [waste load allocations] for point sources and [load allocations] for nonpoint sources and natural background.” (40 C.F.R. § 130.2(i)).

Point sources are explicitly defined in the Clean Water Act to mean, “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.” (33 U.S.C.A. § 1362). Non-point sources are defined in the negative, as sources which are not point sources. One federal regulation pertaining specifically to a restoration program managed by federal agencies defines non-point sources as “Pollution sources which generally are not controlled by establishing effluent limitations under sections 301, 302, and 402 of the Act.” (40 C.F.R. § 35.1605-4). Pollution, in the federal regulations relevant to TMDLs, is defined as, “[t]he man-made or man-induced alteration of the chemical, biological, and radiological integrity of water.” (40 C.F.R. § 130.2(c)).

It is undisputed that much of the mercury-laced sediment that underlies the Delta channels and floodplains is in place due to the actions of humans. Furthermore, to the extent that the Commenters’ activities influence the production and flux of methylmercury to the open water in Delta channels, they are altering the chemical and biological integrity of the water. It follows that since the actions of the Commenters are neither point sources nor attributable to natural background, for the purpose of the TMDL, the Commenters’ actions are appropriately regulated as non-point sources.

Adding further support for this proposition are the federal regulations that define Best Management Practices to be, “[m]ethods, measures or practices selected by an agency to meet its nonpoint source control needs. [Best management practices] include but are not limited to structural and nonstructural controls and *operation and maintenance procedures*.” (emphasis added) (40 C.F.R. § 130.2(m)). Flood control and water management activities influence how much methylmercury is generated in open water areas and may even influence where mercury is deposited. It is clear that the regulatory authority over these activities is considered an integral tool in the implementation of a TMDL. It is important to look at these activities to see if there are different ways of managing the activities to minimize methylmercury production.

DWR Letter Comment #8

Instead, activities that affect the flow in Delta channels that consistently have water should be considered non-load related contributing factors. Water management activities that affect the distribution of methylmercury or its resident time should not be assigned an allocation, but instead should be viewed as something that potentially contributes to conditions that allow methylmercury to enter into the food chain. Thus, the Agencies believe that the Regional Water Board should take into account the conditions of flow in the watershed when determining the appropriate allocations, but it should not include activities that affect flow into those allocations.

In sum, the Agencies do not believe that there is enough information available for the Regional Water Board to reasonably adopt the open water allocations and the action for the CCSB in the proposed BPA and implementation plan. Currently, it is unclear who is, and who should be, held responsible for the methylmercury loading in the Delta open-water. Also, it is unclear how the existing water quality and flow requirements, and the operations necessary to meet those requirements, will be balanced with the new methylmercury allocations and future control actions.

Response to DWR Letter Comment #8

Staff disagrees with DWR's comment that the open water allocation is simply the transport of methylmercury loads. The loads from the methylmercury generated in open water are significant and must be controlled. Flood and water management activities have the potential to modify methylmercury production and loss in open water. The Agencies can conduct control studies to evaluate what modifications can be done to existing and proposed activities to reduce methylmercury production while continuing to carry out federal and state mandated operations. At the end of the adaptive management period, the Central Valley Water Board can weigh whether any of the open water options (if any are identified) make sense to implement, compared to control options for the other source categories.

DWR Letter Comment #9

DWR and the Flood Board believe the most viable solution to fully address the State's responsibility for controlling mercury not related to point and non-point source regulation, and which is not appropriate in a TMDL, is to develop a program, perhaps through legislation, that will create, fund, and staff a statewide mercury characterization and control program. Such a program could be housed within the California Environmental Protection Agency (Cal EPA) and would investigate mercury sources, and identify and implement feasible control actions of sources not appropriate for a TMDL. The program could coordinate with federal, State (including the Delta Stewardship Council), and local public health agencies and local groups to best implement public health advisories and education programs with mercury affected communities. Such an approach would be more appropriate than the proposed TMDL approach because it could identify the funding and develop an implementation plan for addressing mercury contamination in the Delta, while minimizing impacts to existing federal, State, and local public resource programs.

Response to DWR Letter Comment #9

Staff agrees that it would be helpful if there was legislation that created and funded a statewide program for mercury characterization and control. However, staff does not believe that the proposed BPA would in any way prevent establishment of such a program. The characterization and control studies that will be conducted during the adaptive management phase (during the next seven years) may help provide some incentive and information upon which to base appropriate legislation. Also, activities of the land management agencies are

methylating mercury. These land management agencies are the appropriate parties to evaluate these activities and determine what modifications are possible to reduce the generation of methylmercury while continuing to carry out federal and state mandated operations. Please see response to DWR Letter Comment #4 above.

DWR Letter Comment #10

For the above reasons, the Agencies requests that the Regional Water Board not adopt the open water allocations, or at least not assign responsibility, until the Phase 1 studies are completed. The Agencies will continue to work with the Regional Water Board and its staff to develop alternative approaches to addressing methylmercury open water allocation in the BPA. In addition, before adopting the proposed BPA, the Agencies request that the Regional Water Board consider changes to the BPA as identified in our specific comments and revisions identified in Attachments 1 and 2.

Response to DWR Letter Comment #10

As explained in the responses above, staff disagrees with the Agencies' assertions that open water allocations are not appropriate and that the Agencies are not dischargers subject to the Central Valley Water Board's authority. Open water loads are so significant that they should not be ignored; especially since available information indicates that various activities have the potential to influence methylmercury production. Staff believes that the Board cannot afford to ignore the flood and water management activities that could potentially be modified to reduce methylmercury production or enhance demethylation. At the end of the adaptive management period, the Central Valley Water Board can weigh whether any of the open water options (if any are identified) make sense to implement, compared to control options for the other source categories. No late changes are proposed to the draft BPA for the open water allocations.

Department of Water Resources Attachment 1:

DWR Attachment Comment #1

While Board staff acknowledges the "reasonably protect" standard as being the legal standard by which to establish the water quality objective (see page 19 of the Staff report), it occasionally appears that Board staff instead used a "fully protect" standard in establishing the water quality objective of 0.08 and 0.24 mg methylmercury/kg (herein referred to as the 0.24mg/kg standard). Board staff evaluated five alternatives for fish tissue objectives, and chose Alternative 4, which is the 0.24mg/kg standard. The analysis and reasoning that Board staff used to choose this alternative is set forth throughout the Staff Report and the TMDL, and the consistent theme of the analysis is that the 0.24 mg/kg standard was chosen because it "fully protects" the beneficial uses. The following is a non-exhaustive list of passages in the Staff Report and the TMDL where Board staff appear to have used the fully protect, rather than reasonably protect, standard in establishing the water quality objective:

- Page 19 of the Staff Report states "Under alternative 1, beneficial uses are protected by the narrative toxicity objective of the Basin Plan. However, evaluating the success of methylmercury reduction efforts (as part of the implementation plan) will be easier using numeric fish tissue objectives such as those in Alternatives 2 through 5. Alternatives 2 through 5 protect the REC-1 beneficial use already identified in the Basin Plan and the proposed COMM beneficial use. Alternative 2 is not fully protective of the WILD beneficial use because the alternative exceeds the

safe methylmercury levels for some wildlife species. Alternatives 3 through 5 fully protect the WILD beneficial use. Alternative 5 provides the greatest level of protection to people who eat Delta fish.

- Page 20 of the Staff Report states, in pertinent part, “Alternative 2 has a fish tissue objective that allows people to safely eat a moderate amount of delta fish from a variety of trophic levels but does not fully protect all sensitive fish-eating wildlife...Alternative 3 has fish tissue objectives that allow people to safely eat a moderate amount of Delta TL4 fish and also fully protects all sensitive fish-eating wildlife...Alternative 4 has fish tissue objectives that allow people to safely eat a relatively high amount of Delta TL3 and TL4 fish and also fully protects all sensitive fish-eating wildlife.”
- Page 26 of the Staff report explains why Board staff recommend adoption of Alternative 4, which establishes 0.24 mg/kg standard. The report discusses the linkage between methylmercury in water and fish tissue on page 35, and describes the proposed fish tissue objectives for TL3 and 4 fish and small TL2/3 fish in terms of the equivalent methylmercury concentration in standard 350-mm largemouth bass. It then describes three different levels of methylmercury concentration in 350-mm largemouth bass (0.28 mg/kg, 0.24 mg/kg, and 0.42 mg/kg, respectively) and states “Of the three concentrations above, the most protective is the second one: a methylmercury concentration of 0.24 mg/kg in bass predicted to correspond with the TL3 fish tissue objective. This concentration of 0.24 mg/kg in bass protects both human and wildlife consumers of higher and lower trophic level fish in the Delta because the concentration is the lowest of the bass values predicted for the three fish tissue objectives. As a result, a methylmercury concentration of 0.24 mg/kg in 350-mm largemouth bass is proposed as the implementation goal for largemouth bass throughout the rest of this report.”
- Page 60 the TMDL discusses the recommended standard, with the lowest largemouth bass mercury value as being 0.24 mg/kg for largemouth bass, and states “This is the most conservative of all the calculated largemouth bass safe levels and, if attained, should fully protect all listed beneficial uses in the Delta. Staff recommends that 0.24 mg/kg, wet weight, in a standard 350-mm largemouth bass be used as an implementation goal in the linkage analysis (Chapter 5) and determination of methylmercury allocations (Chapter 8).”
- Page 64 of the TMDL is a summary entitled “Key Points,” and the last sentence of the last bullet on that page states “A methylmercury concentration of 0.24 mg/kg in 350-mm length largemouth bass would fully protect humans and piscivorous wildlife species and is proposed as an implementation goal for use in the linkage analysis and determination of methylmercury allocations for point and nonpoint sources.”
- Page 294 of staff report, which is part of the proposed Statement of Overriding Considerations, states, “Phases 1 and 2 of the mercury control program described by the proposed BPA are the primary steps required to fully protect these beneficial uses. Fully achieving these beneficial uses will have positive health benefits and social and economic effects by decreasing the exposure of methylmercury to humans.”

Finally, it should be noted that on page 191 of the Staff Report, in the section entitled “Federal Clean Water Act Requirements for Total Maximum Daily Loads,” it states “Essentially, a TMDL is a planning and management tool intended to identify, quantify, and control the sources of pollution within a given watershed so that water quality objectives are achieved and beneficial uses of water are fully protected.” As discussed at length above, this is not the correct standard for establishing water quality standards, but given the passes cited above, it calls into question whether Regional Water Board staff was relying on the correct legal standard in developing the water quality objective.

Response to DWR Attachment Comment #1

The staff report occasionally refers to fully protecting beneficial uses. When adopting water quality objectives, there are a range of potential values that can protect the use. The objective that is adopted needs to fall in the range of values that protects the use (i.e., fully protects the use). The reasonableness factor is applied to determine what value in the range of fully protective values should be selected.

Staff conducted an analysis of whether the fish tissue objectives representing the full protection of the COMM beneficial use can reasonably be achieved. In the analysis, staff looked at global mercury cycling, background concentrations of mercury, current and projected sources of mercury, activities that could be implemented to reduce mercury loads and interrupt the methylmercury cycle, fish consumption statistics, health risks to consumers, fish tissue targets developed in for San Francisco Bay and other areas and many other factors. Staff concluded that the proposed fish tissue objectives could reasonably be achieved, were consistent with targets developed for San Francisco Bay, and offered protection for a majority of the people. Staff developed alternative fish tissue objectives that would fully protect the beneficial use and are proposing fish tissue objectives that are consistent with Section 13241 of the Water Code with regards to providing reasonable protection of beneficial uses. The most stringent alternative represents the highest consumption rates reported for some consumers. However, the most stringent alternative is not recommended for adoption because staff was unable to show that fish tissue objectives that protect for the highest consumption rate is reasonably attainable.

DWR Attachment Comment #2

This BPA/TMDL document continues to contain requirements for Phase 1 improvements to the Cache Creek Settling Basin (CCSB), a federal Flood Control facility of the Sacramento River Flood Control Project. Phase 1 is purported to be the study phase, with the exception of facilities that are regulated under NPDES permits (e.g., Wastewater Treatment Plants and large Municipal Stormwater systems) which are only required to implement pollution minimization programs as part of the NPDES requirements during Phase 1, and CCSB, which is specifically identified for required improvements. CCSB is not an NPDES point source discharge facility. The Cache Creek watershed is the source of mercury, not the CCSB. Sources of mercury in the Cache Creek watershed are from natural geologic/mineralogical conditions (elemental mercury and various mineral forms, including cinnabar and other mercury compounds are abundant in Coast Range rocks and hot springs). Mercury bearing rocks are abundant in the California Coast Range, and both ongoing hydrothermal and metasomatic activity has concentrated and continues to concentrate mercury within the watershed. Due to the abundant naturally occurring mercury present in Coast Range rocks, and the relationship between gold mining practices and mercury use, mercury mining occurred within the Coast Range, specifically including the Cache Creek watershed. The sources of mercury in and from the Cache Creek watershed are historic and legacy mine waste that has entered the system, as well as mercury-

laden sediment entering the watershed from natural erosion of mercury bearing Coast Range rocks, and direct hydrothermal mercury input from hot springs and related sources. Atmospheric mercury deposition is also a major concern. Cache Creek Settling Basin is not the source of mercury. The sole purpose of the Cache Creek Settling Basin is flood control, and this flood control component is designed to capture sediment. Sediment capture is accomplished by the basin acting as an intermediate base level on the stream's profile, slowing water flow velocity, inducing sediment deposition from the upstream watershed, thereby reducing the volume of sedimentary material entering the Yolo Bypass and downstream water bodies. The settling basin has existed as a flood control feature in one form or another for nearly a century. The current configuration of the CCSB includes a training channel on the western side of the basin to direct flows entering the basin, the main basin area where sedimentary materials settle, and a roller-compacted concrete weir as the main outlet for flow from the Cache Creek watershed into the Yolo Bypass. Water and sediment from the Cache Creek Watershed enter the CCSB, slowing the velocity sufficiently to induce particle settling for a portion of the bed load, suspended load and dissolved load. When the volume of water in the basin reaches the weir elevation, water spills over the structure as designed. A low flow outlet (that can be opened and closed) also exists to allow water to exit the basin under low-flow conditions. There is currently inadequate scientific data to identify CCSB as a net exporter of total and/or methyl-mercury. Studies are needed to determine the flows and sediment/mercury loads entering and leaving the basin. This Draft BPA requires improvements to the CCSB to achieve increased sediment trapping efficiency, during Phase 1, while all other components of the BPA/TMDL (excluding the noted NPDES discharges) are allowed to study the mercury issue during Phase 1. These requirements are also placed upon the CCSB in advance of the formal review of the Delta Mercury Control Program, which will consider potential public and environmental benefits and negative impacts of attaining the allocation. By requiring implementation of improvements to the CCSB in advance of the Regional Water Board's formal review, this Phase 1 requirement will not have the benefit of the same consideration as other potential mercury control activities. Therefore, all requirements for improvements to the CCSB during the Phase 1 period should be removed, allowing the required scientific studies to be completed to identify whether or not CCSB is a net exporter of mercury, and the information generated from those studies should be reviewed during the Delta Mercury Control Program formal review process.

Response to DWR Attachment Comment #2

Staff agrees that the Settling Basin is not an NPDES facility but is a flood protection facility. Staff recognizes that the Cache Creek watershed is the source of mercury that is now trapped in the Settling Basin.

While it is correct that NPDES dischargers are required to develop and implement pollutant minimization programs during Phase 1, it is not true that only NPDES dischargers are required to implement controls in Phase 1. Nonpoint source dischargers are required to implement reasonable, feasible actions to reduce sediment in runoff. So, all dischargers are being required to implement reasonable, feasible controls for inorganic (total) mercury.

Nevertheless, staff is proposing revisions to the implementation provisions for the Settling Basin. See Board staff's Response to DWR Letter Comment #2.

DWR Attachment Comment #3 - Proposed Edits
Page ES-2, line 14: Change tropic to trophic.

Response to DWR Attachment Comment #3

Staff agrees with the edit and changed the text.

DWR Attachment Comment #4

This statement implies that DWR is a Discharger. We disagree with this assertion. A 'Discharger' is defined in various sections of the Porter Cologne Water Quality Control Act. As provided in CWC § 13263.3. Legislative findings; definitions; (c) For the purposes of this section, "discharger" means any entity required to obtain a national pollutant discharge elimination system (NPDES) permit pursuant to the Clean Water Act (33 U.S.C. Sec. 1251 et seq.), or any entity subject to the pretreatment program as defined in Part 403 (commencing with Section 403.1) of Subchapter N of Chapter 1 of Part 403 of Title 40 of the Code of Federal Regulations.

The open water and flood protection systems are not POTWs, are not required to obtain an NPDES permit, and are not subject to a pre-treatment program as specified for operation of the flood protection system and the open water areas of the State, nor are these waters a pollutant or effluent.

In the cases of flood control and open water, the Department (and other State and federal agencies) has specific responsibilities as laid out in the California Water Code (see CWC Sections 8360, 8361, 12648, among others). The levees, channels, bypasses, floodways, and related flood protection features of the Sacramento River Flood Control Project are not identified, considered, recognized, or implied as sources of waste in the California Water Code.

Proposed Edits for Comment #4:

Page ES-3, line 25: The Control Studies can be developed through a stakeholder group approach or other collaborative mechanism, or by individual **dischargers**. Individual **dischargers** are not required to do individual studies if the individual **dischargers** join a collaborative study group(s).

Response to DWR Attachment Comment #4

The definition of "discharger" from section 13263.3 of the Water Code is specific to that section and has no applicability to the action currently under consideration by the Board. Under the federal regulations, the Commenter is considered a non-point discharger. (See Board staff's Response to DWR Letter Comment #7.) In addition, under the Water Code, the Commenter is considered to be discharging a "waste," which is defined as including, "sewage and *any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin*, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal." (emphasis added). (Water Code § 13050). The Commenter's activities are appropriately regulated as a non-point discharge of waste.

DWR Attachment Comment #5:

The Cache Creek Settling Basin's basic function is to provide a sediment capture facility, thereby reducing the volume of sediment transported into the Yolo Bypass. It is not the source of the mercury, rather the recipient of such from the upper Cache Creek natural and mining sources. The US Army Corps of Engineers designed it for the sole purpose of flood protection, and turned it over to DWR for operations and maintenance as a Flood Control Facility.

Cache Creek Settling Basin is already significantly reducing the inorganic mercury loads that would otherwise enter the Yolo Bypass, Sacramento River, the Delta, and the San Francisco Bay. There is no recognition of this fact in any of the Draft BPA or TMDL documents.

Proposed Edits for Comment #5:

Page ES-4, lines 1-3: A schedule for agencies responsible for Cache Creek Settling Basin operations and maintenance to propose and implement improvements to the Basin to reduce inorganic mercury loading to the Yolo Bypass, over and above the reductions already achieved by the existing operation of the basin. (note suggested text addition)

Response to DWR Attachment Comment #5

Staff recognizes that the Cache Creek watershed is the source of mercury that is now trapped in the Settling Basin. The staff reports recognize that the Settling Basin traps about one-half of the mercury washing down from the Cache Creek watershed. Staff is proposing revisions to the implementation provisions for the Settling Basin. See Response to DWR Letter Comment #2.

DWR Attachment Comment #6

If improvements to Cache Creek Settling Basin are required during the Phase 1 implementation, there will be potential significant impacts from the project. Although Regional Water Board staff correctly state that the Regional Water Board does not have the legal authority to specify manner of compliance, several iterations of this Draft BPA/TMDL have provided specific expectations of how Water Board staff would like CCSB improvements to proceed (e.g., perpetual sediment removal, raising of the weir, etc.).

Proposed Edits for Comment #6:

Page ES-4, lines 14-15: Adoption of the proposed BPA will not by itself have a physical effect on the environment, nor will the Phase 1 studies. However, implementation actions taken by responsible entities to comply with some components of the proposed implementation plan and improvements to the environment by controlling mercury and/or methylmercury may have the potential for adverse environmental effects impacts.

Response to DWR Attachment Comment #6

Staff recognizes that changes to the Settling Basin could impact the wildlife and habitat that has been created in the Basin. The original plans for the Settling Basin called for periodic removal of sediment to maintain the life of the basin. Since this did not occur, habitat has become established. Regardless of why wildlife habitat has developed in the Settling Basin, any projects involving the Settling Basin would need to take this into account. Likewise, parties implementing sediment removal projects would need to consider how to manage sediment that was removed. A full assessment of benefits of the habitat in the Settling Basin and potential adverse effects from improvements to basin trapping efficiency should take into account that fish living in the low flow channel of the Settling Basin have substantially higher methylmercury concentrations than fish living in the upstream Cache Creek (please refer to fish methylmercury data Appendix C of the Cache Creek methylmercury TMDL report [Cooke *et al.*, 2003¹]).

¹ Cooke, J., C. Foe, A. Stanish and P. Morris. 2004. Cache Creek, Bear Creek, and Harley Gulch TMDL for Mercury. Central Valley Regional Water Quality Control Board Staff Report. November 2004. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/cache_sulphur_creek/

Staff is proposing revisions to the implementation provisions for the Settling Basin. See Response to DWR Letter Comment #2. The revisions include an opportunity to evaluate the benefits and costs of sustaining the Basin mercury trapping abilities.

DWR Attachment Comment #7

The public benefits and environmental impacts of attaining the ‘mercury’ allocations are not being reviewed until the end of the Phase 1 study period; however, specific improvements to Cache Creek Settling Basin are being required in the Draft BPA/TMDL during the Phase 1 period. If the negative impacts to flood protection are not being address by the Regional Water Board until the Phase 1 Delta Mercury Control Program Review, no improvements can reasonable be required until the positive and negative benefits of such work is reviewed and evaluated, the impacts are quantified, and a decision is rendered that addresses which of the competing interests is in the best interest of the People of the State. Implementation of improvements during the Phase 1 Study period should be removed from the Draft BPA/TMDL documents. This will allow studies to proceed, and the best solutions to be generated that balance the many competing interests.

Proposed Edits for Comment #7:

Program Overview/BPA-2/Paragraph 5, lines 7-9: The review also shall consider other potential public and environmental benefits and negative impacts (e.g., habitat restoration, flood protection, water supply, fish consumption) of attaining the allocations.

Response to DWR Attachment Comment #7

Porter-Cologne grants the Central Valley Water Board the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state. Since the Cache Creek Settling Basin has been identified as a facility impacting waters of the State and DWR has been identified as the responsible party, the Central Valley Water Board is within its authority to require action by DWR (however, the Central Valley Water Board is prohibited from specifying the manner of compliance). Once ordered by the Central Valley Water Board to address the Settling Basin, it would be the responsibility of DWR to propose actions and to evaluate those actions under applicable federal and state laws and regulations to assure that the actions are appropriate. However, this is a moot point since staff is proposing revisions to the implementation provisions for the Settling Basin. See Board staff’s Response to DWR Letter Comment #2.

DWR Attachment Comment #8

In the Program Overview/BPA-2, Paragraph 5: Clarify how “reasonable” and “demonstrate” will be defined.

Response to DWR Attachment Comment #8

Board staff intended the terms to be used as they are defined in standard dictionaries. During the Phase 1 implementation period, Board staff will work with stakeholders to evaluate which inorganic and methylmercury management practices appear to be “reasonable” for different types of sources. If the Central Valley Water Board does not agree with the stakeholder determinations about “reasonable”, the Board can take independent action, consistent with their regulatory authority. The goal is to allow flexibility without limiting the definition of “reasonable”, because limiting the definition could unintentionally limit what the Central Valley Water Board and dischargers might be able to do under varying circumstances. Porter Cologne gives the

Water Boards flexibility because what is “reasonable” can be different for each source category, in a similar way that USEPA regulates NPDES municipal POTWs and MS4s and nonpoint source discharges differently.

Note, since the February 2010 draft BPA was released, the BPA text, “and can demonstrate no disproportionate impacts on local communities as a result”, was removed from the Program Overview section because it was redundant with one of the guiding principles listed in the “Mercury Offsets” section that contained more explicit wording, “Offsets should not be allowed in cases where local human or wildlife communities bear a disparate or disproportionate pollution burden as a result of the offset.”

DWR Attachment Comment #9

Load allocations referenced in this text require significant reductions of methylmercury from open water. It is unclear how the open water allocation could ever be achieved. Naturally occurring and anthropogenic mercury is present throughout the earth materials (rocks and sediments) that make up the wetted system. Mercury is present and disseminated throughout the wetted system. Even with significant efforts to minimize methylmercury production within the Delta and its tributaries, mercury will continue to be in the system. Affecting change to the amount of mercury in open water is unlikely to be possible.

Proposed Edits for Comment #9:

Load and Waste Load Allocations / BPA-3 / Paragraph 1, lines 1-6: Load allocations are specific to Delta subareas, which are shown on Figure xx-x. The load allocations for each Delta subarea apply to the sum of annual methylmercury loads produced by different types of nonpoint sources: agricultural lands, wetlands, and open-water habitat in each subarea, as well as atmospheric wet deposition to each subarea (Table A), and runoff from urban areas outside of Municipal Separate Storm Sewer System (MS4) service areas. The subarea allocations apply to both existing and future discharges.

Response to DWR Attachment Comment #9

See Board staff’s Response to DWR Letter Comment #5.

DWR Attachment Comment #10

The highlighted text is inconsistent with the apparent intent of the Draft BPA/TMDL with respect to Cache Creek Settling Basin (CCSB). Specific reductions are being required for CCSB during Phase 1. This BPA/TMDL should be corrected to be consistent with the highlighted text by removing requirements for implementation of improvements to CCSB during the Phase 1 study period.

Proposed Edits for Comment #10:

Page BPA 3: All dischargers should implement methylmercury management practices identified during Phase 1 that are reasonable and feasible. However, implementation of methylmercury management practices identified in Phase 1 is not required for the purposes of achieving methylmercury allocations until the Regional Water Board has completed the Phase 1 Delta Mercury Control Program Review and has developed the tributary mercury control programs.

Response to DWR Attachment Comment #10

The text identified by DWR has been deleted. However, the deleted text is not relevant to the Phase 1 requirements for the Cache Creek Settling Basin since the Phase 1 requirements

addressed total mercury and not methylmercury. Nevertheless, staff is proposing revisions to the implementation provisions for the Settling Basin. Please see Board staff's Response to DWR Letter Comment #2.

DWR Attachment Comment #11

Page BPA-5, lines 34-38: Why is a control study required for Cache Creek Settling Basin when it is not the source, rather a sensitive receptor from sources in the upper Cache Creek watershed? Until the true originating sources (dischargers) are identified, quantified, and mitigated, true remediation and control of mercury within the Cache Creek watershed and sediment cannot occur.

Response to DWR Attachment Comment #11

Staff is proposing revisions to the implementation provisions for the Settling Basin. Please see Board staff's Response to DWR Letter Comment #2.

DWR Attachment Comment #12

It is unclear how the Regional Water Board can place requirements on agencies conducting State legislated and federally mandated operations and maintenance activities. Sediment migration is a natural process, even in areas with flood and water conveyance and control facilities. This is especially an issue for open water allocations. The identified agencies had no part in the introduction of mercury into the wetted system (natural processes and historic mining practices did), and there is unlikely to be any reasonable solutions for reducing mercury loads in the open water/flood control system, as sedimentation and sediment migration is a natural fluvial function of every wetted system.

The Draft BPA/TMDL text is unclear with regard to the intended allocations and reductions. For example, if a 1 mile portion of a channel is all open water, what is the intent of the control program? If characterization activities identify existing total mercury concentrations within the 1 mile section of open water, what reductions would be required? Is the net reduction the intent (mercury fluxing onto the area minus mercury fluxing off of the property) or is the intent of the control program to remove existing mercury from a portion of the system? Disturbing existing sediment has the potential to mobilize mercury from one area to another, and/or expose mercury that has long been buried in a deposit to now be available for geochemical reactions.

With respect to this, the geochemical balance between all mercury species must be considered, and the net flux (combination of all mercury entering an area minus combination of all mercury leaving an area) must be considered, not simply the flux of methylmercury entering the water column from a particular area.

Proposed Edits for Comment #12:

Page BPA-10: Requirements for State and Federal Agencies Open water allocations are assigned jointly to the State Lands Commission, the Department of Water Resources, and the Central Valley Flood Protection Board. Open water allocations apply to the net methylmercury load that fluxes to the water column from sediments in open-water habitats within channels and floodplains in the Delta and Yolo Bypass. Net methylmercury load is the difference between all mercury species entering a study area minus all mercury species leaving a study area.

The transport and deposition of mercury-contaminated sediment and water management activities contribute to the Delta fish mercury impairment. State and Federal projects affect the transport of mercury and the production and transport of methylmercury. Activities including water management and storage in and upstream of the Delta and Yolo Bypass, maintenance of and changes to salinity objectives, dredging and dredge materials disposal and reuse, and management of flood conveyance flows are subject to the open water methylmercury allocations.

Response to DWR Attachment Comment #12

The Central Valley Water Board cannot supersede statute. The BPA requirements for State Agencies is consistent with Section 13247 of the California Water Code which states, "State offices, departments and boards, in carrying out activities which affect water quality, shall comply with water quality control plans approved or adopted by the state board unless otherwise directed or authorized by statute, in which case they shall indicate to the regional boards in writing their authority for not complying with such plans." The BPA does not interfere with the responsibilities of the State Agencies which is generally to carry out their mandated activities without significant impact to the environment. State Agency activities that increase methylmercury concentrations are a significant impact to the environment and compliance with the BPA requirements provides the mitigation measures that the Agencies must conduct to reduce or eliminate these impacts.

Staff agrees that controlling methylmercury in the open waters of the Delta may not be straightforward. Therefore, the BPA includes an adaptive management framework (Phase 1, lasting seven years) that describes how Board staff intends to work with DWR and others prioritizing and implementing studies to determine how land and water management activities affect methylmercury. If, during the adaptive management phase, it turns out that none of DWR's activities seem likely to be significantly influencing methylmercury production in the open channels, then no control actions will need to be done.

Staff did not make DWR's suggested changes to the open water allocations because if the open-water habitat allocation were to be "credited" with the amount of "all mercury species leaving" a subarea, allocations for other sources would need to be reduced by an equivalent amount to compensate, which would not be an equitable distribution of responsibility. The intent of the control program is to reduce methylmercury concentrations in ambient Delta water so that Delta fish methylmercury concentrations are reduced. Staff expects that the suite of potential control activities may vary for different Delta areas depending on the nature of the methylmercury and inorganic mercury sources and potential negative environmental effects that could result from possible control actions. Control actions could include some combination of actions specific to different Delta areas, e.g., actions that reduce inorganic mercury in Delta channel sediment; reduce methylmercury production in channel open water, wetland and floodplain habitats; and/or reduce inputs of methylmercury to the channels. The commenter is correct in that open water habitats are a source (flux from the sediment) and a sink (photodegradation and particle settling from the water column) for methylmercury, and in that methylmercury and inorganic mercury are lost by way of transport downstream. The proposed allocation and control strategy included in the draft BPA account for these sources and losses. The proposed allocations are assigned to sources, not sinks. All the sources – including sediment in open-water habitat – contribute to methylmercury in the water column of Delta waterways (a.k.a. open water habitat), not just flux from open-water habitat sediments. The sum of all the methylmercury sources needs to be reduced to reduce methylmercury in the water column and in fish. One way to reduce the effect of the sum of methylmercury source contributions on water column methylmercury concentrations could be to enhance loss

processes (photodegradation and particle settling from the water column). However, if the open-water habitat allocation were to be “credited” with the current “loss” amount, allocations for other sources would need to be reduced by an equivalent amount to compensate, which would not be an equitable distribution of responsibility. Based on the 2003 and 2008 CalFed Delta methylmercury transport and cycling studies it is obvious that loss processes are important, which is why the draft Basin Plan amendments include requirements for state and federal agencies to evaluate their activities’ effects on ambient methylmercury concentrations in Delta open water areas and floodplain areas. Loss processes need to be maintained at their current levels (or, if possible, enhanced). If new water management or flood management activities caused methylmercury loss processes to decline (resulting in higher water column methylmercury concentrations), additional control actions would be needed to compensate.

DWR Attachment Comment #13

Page BPA-10, lines 17-21: Open water methylmercury allocations appear to be a methodology for spreading perceived mitigation costs for unidentified sources throughout the large water maintenance and flood control agencies. What the miners of the late 1800’s released into the watersheds and drainage courses of California is not the direct responsibility of modern State and federal agencies charged with protecting lives and property from floods.

Response to DWR Attachment Comment #13

See response to DWR Letter Comments #3 and #4.

DWR Attachment Comment #14

DWR staff has consistently raised the issue that Cache Creek Settling Basin (CCSB) is not the source of mercury, but simply a flood protection system component designed to reduce the volume of sediment reaching the Yolo Bypass, Sacramento River, the Delta, and downstream waterways. By minimizing sediment transport into the Yolo Bypass the CCSB has been minimizing mercury transport from the Cache Creek Watershed into downstream waters.

The proposed modifications presented here to the Draft BPA/TMDL text are consistent with previous DWR staff comments, and allow sufficient time for control studies to be completed, feasible control alternatives to be evaluated, and funding sources to be identified. However, because Cache Creek Settling Basin is a federal Flood Control facility and a component of the Sacramento River Flood Control Project, any proposed modifications to the CCSB must go through a federal Feasibility Study, be shown to be in the federal interest, be selected as the best alternative, and be authorized and funded by Congress.

All reference to ‘reduction of total mercury from the Basin’ were modified by changing the word ~~total~~ to ~~net~~. This is necessary because CCSB is not the source of mercury in the system. The sources of mercury from the Cache Creek Watershed are the natural/mineralogical/hydrothermal mercury entering the system, the waste materials from historic mining practices, and atmospheric deposition. The burden for addressing the mercury contamination from the Cache Creek Watershed should not be placed upon those Departments and Agencies who maintain the flood protections system. Source control begins at the source (those anthropogenic activities that introduced mercury into the watershed). By specifying that the net mercury (mercury entering the CCSB minus

mercury leaving the CCSB) must be controlled, this action creates a reasonable relationship between CCSB operations and maintenance, and any mercury 'produced' by that process.

By addressing the net mercury discharged from CCSB, the upstream watershed, which is already covered by a TMDL, will be forced to address the mercury input from the Cache Creek Watershed into the Cache Creek Settling Basin, Yolo Bypass, Sacramento River, the Delta, and the San Francisco Bay.

Proposed Edits for Comment #14:

Page BPA-12: Cache Creek Settling Basin Improvement Plan and Schedule

DWR, Central Valley Flood Protection Board, and USACE, in conjunction with any interested landowners and other stakeholders, shall implement a plan for management of mercury in or discharged from the Cache Creek Settling Basin, including improvements for decreasing ~~total net~~ mercury discharges from the Cache Creek Settling Basin, ~~by 21 December 2018, or following Congressional authorization to modify the Cache Creek Settling Basin during the Phase 2 implementation.~~

1. By [one year after ~~Effective Date the Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~] the agencies shall take all necessary actions to initiate the process for Congressional authorization to modify the Basin, including coordinating with the USACE.
2. By [two years after the ~~Effective Date Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~], the agencies shall develop a strategy to reduce total mercury discharged from the Basin for the next 20 years. The strategy shall include a description of, and schedule for, potential studies and control alternatives, and an evaluation of funding options. The agencies shall work with the landowners within the Basin and local communities affected by Basin improvements.
3. By [four years after the ~~Effective Date Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~], the agencies shall submit a report describing the long term environmental benefits and costs of sustaining the Basin's mercury trapping abilities indefinitely.
4. By [four years after the ~~Effective Date Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~], the agencies shall submit a report that evaluates the trapping efficiency of the Cache Creek Settling Basin and proposes, evaluates, and recommends potentially feasible alternative(s) for mercury reduction from the Basin. The report shall evaluate the feasibility of decreasing mercury loads from the basin, up to and including a 50% reduction from existing loads.
5. By [six years after ~~Effective Date the Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~], the agencies shall submit a detailed plan for improvements to the Basin to decrease ~~net~~ mercury loads from the basin.
6. By [eight years after ~~Effective Date the Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~], the agencies shall implement plans to reduce ~~total net~~ mercury loads discharged by the Cache Creek Settling Basin and complete project improvements by [ten years after ~~Effective Date the Central Valley Water Board completes a formal review of the Delta Mercury Control Program~~].

The agencies shall submit the strategy and planning documents described above to the Regional Water Board for approval by the Executive Officer.

Response to DWR Attachment Comment #14

Staff is proposing revisions to the implementation provisions for the settling Basin. See Response to DWR Letter Comment #2.

Also, please consider that fish living in the low flow channel of the Settling Basin have substantially higher methylmercury concentrations than fish living in the upstream Cache Creek (please refer to fish methylmercury data Appendix C of the Cache Creek methylmercury TMDL report [Cooke *et al.*, 2003²]).

DWR Attachment Comment #15

Page BPA-12, lines 5-9: Cache Creek Settling Basin (CCSB) is being incorrectly characterized as the source of mercury, rather than as the contaminated parcel affected by dischargers in the upper basin. Also, CCSB was not designed to be a permanent impoundment facility, as implied by the Draft BPA/TMDL.

Response to DWR Attachment Comment #15

Staff is proposing revisions to the implementation provisions for the settling Basin. Please see Board staff's Response to DWR Letter Comment #2.

DWR Attachment Comment #16

Page BPA-12, lines 18-20: The environmental benefits in the delta will be far overshadowed by the environmental degradation that occurs in the CCSB as a result of habitat removal and disposal of basin sediment as contaminated waste. The intent to have DWR remove sediment from the CCSB will likely result in increased methylmercury flux from areas of sediment removal within the basin, as long buried mercury sources are exposed to the environment by the disturbance from the removal action. The costs of work in the CCSB will also divert monies away from maintenance of flood facilities, which has a negative impact on flood protection.

Response to DWR Attachment Comment #16

See Response to DWR Attachment Comment #6. The BPA does not specify the manner of compliance for the Settling Basin, i.e. the BPA does not require sediment removal. The Staff Report evaluates several alternatives so that cost estimates and environmental concerns could be evaluated. However, the BPA requires DWR to develop and implement its own plan to manage contaminated sediment in the Settling Basin. See Board staff's Response to DWR Letter Comment #2.

Also, please consider that fish living in the low flow channel of the Settling Basin have substantially higher methylmercury concentrations than fish living in the upstream Cache Creek (please refer to fish methylmercury data Appendix C of the Cache Creek methylmercury TMDL report [Cooke *et al.*, 2003]).

DWR Attachment Comment #17

Page BPA-12, lines 21-25: CCSB is not intended to be a hazardous waste facility. The mercury problem should be addressed upstream at the sites of active discharge.

² Cooke, J., C. Foe, A. Stanish and P. Morris. 2004. Cache Creek, Bear Creek, and Harley Gulch TMDL for Mercury. Central Valley Regional Water Quality Control Board Staff Report. November 2004. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/cache_sulphur_creek/

Modifying the basin solely to be something it was not designed to do will likely compromise its primary purpose.

Response to DWR Attachment Comment #17

See Board staff's Response to DWR Letter Comment #2. DWR has been sent a report showing that the Settling Basin sediments are not likely hazardous. Staff recognizes that the Cache Creek watershed is the source of mercury that is now trapped in the Basin. Over the years, the Basin has accumulated a lot of mercury enriched sediment. As the Basin fills in, less mercury will be trapped. The Regional Water Board has adopted a TMDL to address mercury in Cache Creek but mercury enriched sediment will continue to come down the creek and enter the Settling Basin because so much mercury is already in the Cache Creek channel. How these loads are managed is important to the Yolo Bypass.

It seems likely that there is the opportunity to manage and maintain the Settling Basin in a manner that would greatly increase the amount of mercury enriched sediment that is trapped, while at the same time maintaining the use of the Basin as a flood control facility. DWR is involved in the Bay Delta Conservation Plan effort, a primary focus of which is to develop marsh and other habitat in Yolo Bypass. Managing mercury in the Bypass and tributaries to the Bypass will be a significant challenge for the restoration efforts. DWR is involved in the Settling Basin and the restoration efforts. DWR has the opportunity to enhance the potential success of their restoration efforts by implementing management options in the Settling Basin that will decrease the discharges of mercury.

DWR Attachment Comment #18

Page BPA-12, lines 28-30: CCSB is not an active source discharger; rather it receives discharges from sources in the upper Cache Creek watershed, with a portion of that input material passing through via hydraulic transport into the Yolo Bypass. It is recognized that without the Cache Creek Settling Basin's, the volume of sediment and mercury reaching Yolo Bypass and downstream waters would be greater.

Response to DWR Attachment Comment #18

Please see Board staff's Response to DWR Letter Comment #2.

DWR Attachment Comment #19

It is an important distinction in that the source tributaries in the upper reaches of watersheds are where discharges of mercury originate.

Proposed Edits for Comment #19:

Page BPA-12, line 35: Change watersheds to "entire watersheds"

Response to DWR Attachment Comment #19

Staff agrees that mercury originates in the Coast Range and the Sierra Nevada. However, staff disagrees over the need to clarify the use of the term "watersheds" in the BPA. The purpose of the term "watersheds" in the discussion of the Tributary Watersheds is to present plans for future TMDL development of tributaries to the Delta. When these TMDLs are developed, the Central Valley Water Board will decide whether the watershed of the named water body is sufficient or tributary watersheds of the named water body need to be included. For example, the Cache Creek Watershed TMDL included Bear Creek and Harley Gulch.

DWR Attachment Comment #20

Page BPA-15, lines 2-5: The State Water Resources Control Board should be the lead funding agency, as the mercury discharges are historical in origin and system-wide throughout the contributing watersheds of the Sacramento and San Joaquin River Systems and their affiliated tributaries. These tributary watersheds reach into old mining districts and associated sediments in the upper and middle reaches. As DWR staff has expressed on numerous occasions throughout this process, the most appropriate action should be for Cal-EPA/SWRCB/CV-RWQCB to seek a sponsor for new legislation, and obtain funding for an appropriate mercury characterization and control program, rather than pushing this issue on other agencies. Doing so would be a much better way to address this issue than diverting funding that is specific for flood protection, species recovery, water conveyance, and other legislatively mandated programs this effort to cover the costs of this proposed regulatory program.

The mercury issues in California are a legacy problem. Such problems should be approached holistically, with goals, purposes, and funding strategies laid out. The burden for implementing this program should be borne by all of the State of California as a whole, rather than by select agencies that were identified as “responsible” because they have various mandates and responsibilities related to the wetted system. This Draft BPA/TMDL is an unfunded mandate from a regulatory agency responsible for water quality to other agencies who are peripherally involved.

Response to DWR Attachment Comment #20

Please see Board staff’s Responses to DWR Letter Comments #4, #5 and #9.

DWR Attachment Comment #21

Page BPA-15, lines 16 & 21: Watershed stakeholders [16] is a more appropriate term than dischargers [21]. The State Water Resources Control Board is also a watershed stakeholder. Watershed stakeholder infers parties with a vested interest, while the term “dischargers” implies an active source generator, which streams, reservoirs, and floodways in the Central Valley are not; they are merely hydraulic conveyance facilities.

Response to DWR Attachment Comment #21

The Commenter is confusing the use of the terms. Line 16 and Line 21 are two recommendations for other entities. Line 21 is specifically a recommendation for Dischargers that are imposed administrative civil liabilities (ACLs) to use those ACLs for supplemental environmental projects (SEPs) that address total and methylmercury and for exposure reduction products. The Supplemental Environmental Project Policy has language that limits how Dischargers can use ACLs for SEPs so there is a need to provide language to clarify the applicability of restrictions in the Supplemental Environmental Project Policy on use of ACLs by Dischargers. To use any term other than “Discharger” would be inconsistent with the Supplemental Environment Project Policy. No changes are recommended for the BPA.

DWR Attachment Comment #22

Page BPA-15, lines 26-28: The estimated annual costs for agricultural compliance are probably too low by a magnitude of 10 times.

Response to DWR Attachment Comment #22

Staff provided cost estimates which are detailed in the Staff Report based on the assumptions provided. Staff used readily available information to estimate the costs. DWR does not provide alternative estimates for the Central Valley Water Board to consider for the costs to agriculture. No changes are recommended for the BPA.

DWR Attachment Comment #23

It is not certain that the purposed fish tissue objective is the best way of determining compliance with mercury allocation levels. Fish tissue sampling won't provide specific data to show whether mercury source reduction and control is working for specific areas. Fish inhabit certain areas and migrate to other areas for spawning. How does this type of monitoring show compliance with mercury allocation levels at a particular location? Monitoring fish tissue may provide a general idea of overall reductions, however, these reductions cannot be definitely attributed to a particular control action.

Response to DWR Attachment Comment #23

Water quality objectives, and in this case fish tissue objectives, articulate the limits or levels of water quality constituents or characteristics necessary for the reasonable protection of beneficial uses of water, in this case the REC-1, WILD and COMM beneficial uses. Staff believes that fish tissue objectives are the best goal for the program for the Delta (rather than a water column objective) because the reason that fish tissue concentrations are considered impaired is because humans and wildlife eat the fish with mercury-laced tissue. See Chapter 5 of the TMDL Staff Report for an analysis linking methylmercury concentrations in fish to methylmercury concentrations in water to determine an acceptable ambient methylmercury concentration that could then be used to determine methylmercury source reductions necessary (i.e. allocations) to achieve the fish tissue objectives.

The draft BPA specifies monitoring reaches (not point locations) in the Delta and that fish monitoring will include representative fish species, which was intended to include migratory and resident species. Also, although some species are migratory, and although fluctuations occur in methylmercury levels in the water column and fish in the Delta, water methylmercury patterns exist and persist long enough in different areas of the Delta to be reflected in fish uptake, with regional fish mercury patterns that stay consistent over years (e.g., Davis *et al.*, 2003 and 2008³). For this reason, monitoring fish mercury levels is an appropriate way to track compliance with the proposed fish tissue objectives.

Staff intends to use other measures to help assess progress in the mercury reductions efforts, such as methylmercury concentrations in water and sediment mercury concentrations. Water column monitoring is used to assess compliance with allocations. The draft BPA includes compliance monitoring requirements for point and nonpoint sources in the Delta/Yolo Bypass reductions so that the effects of particular control actions can be discerned.

DWR Attachment Comment #24

³ Davis, J.A., B.K. Greenfield, G. Ichikawa and M. Stephenson. 2003. Mercury in Sport Fish from the Delta Region. Final report submitted to the CALFED Bay-Delta Program for the project: An Assessment of the Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed (Task 2A). San Francisco Estuary Institute and Moss Landing Marine Laboratories. Available at: <http://loer.tamug.tamu.edu/calfed/FinalReports.htm>.

Davis, J.A., B.K. Greenfield, G. Ichikawa, and M. Stephenson. 2008. Mercury in sport fish from the Sacramento San Joaquin Delta region, California, USA. *Science of the Total Environment*, 391:66-75.

This option requires significant investment of dollars and resources to conduct various studies to evaluate methylmercury and inorganic mercury controls to achieve allocations levels. Additionally, there will be a significant increase in O&M cost to control sources of mercury (i.e., Cache Creek Settling Basin sediments, weirs, erosion control, etc) for a contaminant that the named agencies did not produce. If DWR can't achieve the allocation goal, then additional investment will be needed to conduct and prepare the alternatives analysis.

Environmental permitting and/or mitigation will most likely be required when implementing source reduction and control. These costs are considerable, and do not appear to be considered.

Proposed Edits for Comment #24:

Staff Report - *Consideration #3: Phased Approach* / 43 / entire section: Consideration of Phase approach, Option 3(c)

Response to DWR Attachment Comment #24

DWR indicates that our cost estimates are too low for the studies and for projects that may have to be implemented. DWR does not provide alternative estimates for us to consider for the costs of studies. Staff used readily available information to develop cost estimates which are detailed in the Staff Report based on the assumptions provided. Staff's cost estimates for the Settling Basin and other potential control actions to address the open water allocations considered the potential cost of a Congressional authorization process, habitat surveys, wetland delineation, fisheries surveys, structure scour studies, flood routing studies, technical alternatives analyses, stakeholder meetings, preparation of EIS/EIR and other reports, land easements, property acquisition, and other potential costs (please see Sections B, G and H in Appendix C of the February 2010 Basin Plan Amendment Staff Report).

Staff is proposing revisions to the implementation provisions for the Settling Basin. See Response to DWR Letter Comment #2.

DWR Attachment Comment #25

Implementation will most likely require a permit(s) (401 cert, WDRs, NPDES, etc). The staff report does not indicate what type of requirements, provisions, and monitoring might be included in a 401 cert, WDRs, or NPDES permit. These are potentially significant costs, and must be considered.

Proposed Edits for Comment #25:

Staff Report - *Consideration #3: Phased Approach* / 61 / entire section: Option 7 (e) Develop methylmercury allocations for all source categories.

Response to DWR Attachment Comment #25

Implementation and monitoring requirements for various dischargers are included in the BPA. Please see Appendix C of the February 2010 Basin Plan Amendment Staff Report for a detailed review of cost estimates for reasonably foreseeable methods of compliance, which include an estimate of potential costs associated with potential monitoring requirements and other provisions that could be associated with 401 certifications, NPDES permits, and other waste discharge requirements. Table 4.5 in the Staff Report provides a summary of these cost estimates. Economic considerations are also addressed in sections 3.2.4 and 7.4 of the Staff Report.

DWR Attachment Comment #26

There will be significant costs associated with methyl and total mercury characterization and control studies for new or upgraded projects, and to minimize to the extent practicable any methylmercury loading to the Delta resulting from new projects. The cost associated with ways of potentially dealing with management of methylmercury in the Yolo Bypass appear low. The cost assumption does not include potential permitting and mitigation costs.

Proposed Edits for Comment #26:

Staff Report - Water management and Flood Conveyance / 127: Water management and Flood Conveyance

Response to DWR Attachment Comment #26

See Board staff responses to DWR Attachment Comments #24 and 25. The economic analysis appropriately considers the cost of compliance. Water Code section 13241 requires that the Central Valley Water Board consider economics when establishing water quality objectives. Public Resources Code section 21159 requires that the Central Valley Water Board “perform, at the time of the adoption of a rule or regulation requiring the installation of pollution control equipment, or a performance standard or treatment requirement, an environmental analysis of the reasonably foreseeable methods of compliance. In the preparation of this analysis, the agency may utilize numerical ranges or averages where specific data is not available; however, the agency shall not be required to engage in speculation or conjecture.”

The Commenter is referred to Section 3.2.4 of the BPA Staff Report for the discussion of economic considerations required under Water Code section 13241 and to Section 7.4 of the BPA Staff Report for a discussion of economic considerations associated with the reasonable foreseeable methods of compliance required under Public Resources Code section 21159. Neither the Water Code section 13241 nor the Public Resources Code section 21159 requires that the Central Valley Water Board consider the costs of permits. At this time, any cost for mitigations due to implementing any control actions would be speculative since no control actions have been identified for DWR to perform, and indeed, it remains to be seen whether control actions will have an effect on the production and transport of methylmercury, and therefore, whether control actions will be required much less any mitigation measures. Neither the Water Code section 13241 nor the Public Resources Code section 21159 requires that the Central Valley Water Board engage in speculation.

The cost to obtain permits is not part of the economics because DWR is required to obtain permits regardless of whether the Central Valley Water Board adopts the BPA.

DWR Attachment Comment #27

Staff Report – 4.4.2 Cost Considerations / 135 – 140 / all paragraphs: Costs identified in the Draft BPA/TMDL appear to greatly underestimate the likely actual. (Example, to complete a characterization and control study for the entire wetted system (open water)).

Response to DWR Attachment Comment #27

See responses to DWR Attachment Comments #24 and #25.

DWR Attachment Comment #28

Costs are likely significantly underestimated.

Proposed Edits for Comment #28:

Table 4.5, line 139 (sic): Summary of Estimated Costs for Implementation- Cache Creek Settling Basin

Response to DWR Attachment Comment #28

See responses to DWR Attachment Comments #24 and #25.

DWR Attachment Comment #29

Implementation Alternative 4: It appears that the proposed alternative will require DWR to make major modifications (i.e., raise weir, increase settling basin size, remove sediment, etc.) to the Cache Creek Settling Basin to increase sediment trapping efficiencies. Is it too early to say whether those major modifications need to be done, or if there are other ways to meet mercury allocation criteria.

Response to DWR Attachment Comment #29

Staff is proposing revisions to the implementation provisions for the Settling Basin that address this comment. See Response to DWR Letter Comment #2.

DWR Attachment Comment #30

Two years to submit a strategy to reduce mercury loading from the Cache Creek Settling Basin is not enough time, especially since no determination has been completed to identify the extent of the mercury contamination from the Cache Creek Watershed into the basin.

Proposed Edits for Comment #30:

Page 151: Summary of recommended Implementation Actions and Timeline (Implementation Alternative 4)

Response to DWR Attachment Comment #30

Staff believes that the BPA provides adequate time for DWR to develop a strategy. There was a sediment maintenance plan that was supposed to be implemented for the Settling Basin. Staff is uncertain how the maintenance plan intended to deal with the dredged sediment. The strategy required in the BPA can include a time schedule to develop a more detailed strategy if DWR feels that additional time is necessary.

DWR Attachment Comment #31

The Cache Creek Settling Basin is a flood control facility of the Sacramento River Flood Control Project. Authorization for this project does not include addressing mercury impacts from the Cache Creek watershed. Although DWR staff participated fully in the stakeholder process, we do not agree that the specific recommendations for Cache Creek Settling Basin are appropriate, feasible, or can be accomplished.

The date set forth in the Draft BPA/TMDL of improvements to the Cache Creek Settling Basin (21 December 2018) are for flood control improvements only, and are not intended to specifically address mercury capture. The language of the Draft BPA/TMDL utilizes a date for envisioned flood control improvements, and places additional requirements on those potential improvements beyond the authorization of the federal flood control project.

DWR staff has repeatedly identified these issues in meetings, personal discussions, written submittals, and telephone conversations with Regional Water Board staff. To the Board staff credit, the dates for implementing the regulatory mandated actions and requirements for CCSB have been extended from earlier Draft BPA/TMDL dates, however, there continues to be a push from Regional Water Board staff to get DWR to complete improvements and obtain mercury reductions using the Cache Creek Settling Basin, without adequate consideration of the costs (financial, resources, public safety, increased liability, etc.) of implementing such actions. For example, funding directed to a mercury characterization and control program directly affects available funding to operate and maintain the existing flood protection system (which includes maintaining channel capacity, completing erosion repairs, conducting vegetation management, etc.) with the potential of catastrophic consequences. The considerations of potential public safety reduction from implementing the program have not been identified in relation to the potential benefits of implementing a mercury characterization and control program.

Funding to implement the program (whether related to specifics at Cache Creek Settling Basin, wetland areas, or others) appears to be significantly underestimated. Regional Water Board staff make some concessions of this fact specifically related to the high cost of the stakeholder process, however the same applies to the entire cost analysis. Further, the open water allocation (of which the Draft BPA/TMDL names DWR as a key agency to achieve) does not appear to include any cost estimates. Implementing characterization and control of mercury for the entire wetted system in the Central Valley is not a trivial exercise, and the likelihood of actually achieving the desired allocations for open water is unlikely, due to the unfeasibility of stopping or controlling natural erosion and sediment migration within the various water courses.

Proposed Edits for Comment #31:

Appendix C – Section B. Cache Creek Settling Basin / pgs C 5 – C 15 / Entire Section:
Inappropriate assignment of responsibility on the flood protection system to affect mercury reduction

Response to DWR Attachment Comment #31

Staff is proposing revisions to the implementation provisions for the Settling Basin. See Board staff's response to DWR Attachment Comment #2. In regards to the costs, please see responses to DWR Attachment Comments #24 and #25.

DWR Attachment Comment #32

Cost of sediment removal, weir and levee maintenance seems low. No mitigation costs were assumed in the cost analysis. Cost estimate assumes excavated sediment is not hazardous or designated waste, and could be reused as building or road foundations. What if sediments are too contaminated for reuse, are inappropriate as foundation materials, or costs to move material from the CCSB to the 'final destination' are too great. Cost of trucking uncontaminated spoil materials more than about 2 miles become a significant factor from a financial standpoint as well as from a greenhouse gas emissions standpoint. Disposal cost or treatment cost could be significant. Cost estimates for disposal and treatment should be included. Doing so would identify more realistic costs, and are likely to increase the identified cost at least 10 fold.

Proposed Edits for Comment #32:

Appendix C pgs C-12 –C15, Tables C3-C5: Cost Considerations Calculations for the Implementation Program Alternatives

Response to DWR Attachment Comment #32

See responses to DWR Attachment Comments #16, #17, #24, #25, and #26. The BPA does not require sediment removal and the Basin sediments are not likely hazardous. Staff used readily available information to develop cost estimates which are detailed in the Staff Report based on the assumptions provided. DWR does not provide alternative estimates for the Central Valley Water Board to consider for the costs.

DWR Attachment Comment #33

No mitigation costs were assumed in the cost analysis. Cost estimate assumes excavated sediment is not hazardous/designated waste and could be reused as building or road foundations. These are unrealistic assumptions. Disposal cost or treatment cost could be significant. Cost estimates for disposal and treatment should be included.

Proposed Edits for Comment #33:

Appendix C pgs C-58: Yolo Bypass Flood Conveyance Projects, Implementation of Methyl Mercury Management Practices for Existing and New Projects

Response to DWR Attachment Comment #33

DWR was provided with a report showing that the Basin sediments are not likely hazardous. Discussion of mitigation costs would be speculative. See responses to DWR Attachment Comments #24, #25 and #26.

DWR Attachment Comment #34

Section 6.2.2 Within-Delta Sediment Flux. Page 88: Page 88 and associated Current Loads in Table 6.4 and 8.5: The annual open water methylmercury load was estimated by multiplying open water area by an estimated open water sediment flux rate of 10 ng/m²/day by 365 days/year. The estimated flux rate of 10 ng/m²/day appears to have come from the report titled "Sediment-Water Exchange and Estuarine Mixing Fluxes of Mercury and Monomethyl Mercury in the San Francisco Bay Estuary and Delta" which can be found here: ([http://loer.tamug.edu/calFed/Report/Final/CALFED%20Mercury%20Project%20-%20TAMUG%20final%20report%20\(Task%204B\).pdf](http://loer.tamug.edu/calFed/Report/Final/CALFED%20Mercury%20Project%20-%20TAMUG%20final%20report%20(Task%204B).pdf)). This report estimates a flux rate of 10 ng/m²/day for open water in the Delta except for the Sherman Island area, with an estimated flux rate of 5 ng/m²/day, and the Mokelumne and Cosumnes areas, with an estimated flux rate of 40 ng/m²/day. Is there a reason why the TMDL used a flux rate of 10 ng/m²/day for the entire western Delta and the Mokelumne and Cosumnes areas instead of the estimated flux rates for those areas provided in the report?

Response to DWR Attachment Comment #34

Summary: DWR is correct in that, as cited in the TMDL Report, Board staff obtained the open water sediment flux rate of 10 ng/m²/day from Gill and others' 2003 CalFed report. Board staff purposefully used the flux rate of 10 ng/m²/day to characterize all areas of the Delta because it is based on a substantially larger sample size. Given the paucity of data available for individual sites, this is a reasonable and prudent approach. Also, as discussed below, use of different flux rates for the Cosumnes and Sherman Island areas of the Delta would not result in a change in our overall understanding of methylmercury source contributions or in the overall strategy proposed by Board staff to achieve the proposed fish tissue objectives in every area of the Delta. Board staff does not recommend adjusting the TMDL calculations. However, if DWR collects additional information to improve the open-water sediment flux contributions during the

Phase 1 study period, please submit it to the Board. The draft BPA commits the Board to a Phase 1 Program Review during which the Board would review new information and consider adjustments to the source load estimates and allocations, as appropriate.

Details: Gill and others' study deployed a flux chamber at Delta sites during five separate field sampling efforts for a total of 24 deployments, with sediment-water exchange fluxes ranging from -92 to 850 pmol/m²/day. A flux chamber was deployed at the Cosumnes River site for only three sampling events because, as stated in Gill and others' report, a suitable deployment site could not be identified during two sampling attempts. Sediment-water exchange fluxes ranged from 18 to 130 pmol/m²/day at the Cosumnes site. No flux chamber deployments took place on the Mokelumne River. A flux chamber was deployed at the Sherman Island site on four dates, with sediment-water exchange fluxes ranging from -92 to 14 pmol/m²/day. [Please see Table 2 and Figure 1 in Gill and others' report for flux rates by sample event and sampling locations, respectively.]

Gill and others' report provided a "very rough estimate" of methylmercury input to the Bay Delta region from sediment-water exchange methylmercury fluxes for the Delta region that divided the Delta region into 14 areas and used a flux rate of 10 ng/m²/day for 11 of those areas, 40 ng/m²/day for the Cosumnes and Mokelumne Rivers areas, and 5 ng/m²/day for the Sherman Island area (Gill *et al.*, 2003, Table 3). The following text from Gill and others' report describes their estimate:

"A very rough estimate of the input of total Hg and MMHg to the Bay Delta region is made in Table 3. These estimates are based on GIS-based estimates of the surface areas for several regions of the Delta and an estimate of the input flux for total Hg and MMHg and for these regions. Clearly, this is only a rough estimate that needs considerable refinement because of the paucity of data in particular, but it is nonetheless constructive for scaling purposes." [page 10]

Because of the variability in measurements at each sampling site and across all sites, and because so few sampling events took place at each individual site, Board staff determined that using the 10 ng/m²/day value for all areas of the Delta would be a more reasonable and prudent approach. In addition, flux data collected for the Cosumnes River almost certainly is not characteristic of the Mokelumne River either upstream or downstream of its confluence with the Cosumnes River. Surface sediment total mercury concentration data collected by another CalFed study (Slotton and others, 2003⁴) indicated that surface sediment mercury concentrations are more than four times higher on the Cosumnes River than on the Mokelumne River. Surface sediment mercury concentrations at multiple sites in the lower Cosumnes River range from about 0.20 to 0.32 µg/g (dry weight), compared to 0.04 µg/g and 0.07 µg/g for the Mokelumne River upstream and downstream, respectively, of its confluence with the Cosumnes River (Slotton and others, 2003, Figure 2).

The Cosumnes River reach is a small portion (about a quarter) of the Mokelumne-Cosumnes "subarea" of the Delta delineated for the methylmercury TMDL (please see Figures 2.2 and 6.1 in the Delta TMDL Report). If an open water sediment flux rate of 40 ng/m²/day is substituted

⁴ Slotton, D.G., S.M. Ayers, T.H. Suchanek, R.D. Weyland, A.M. Liston, C. Asher, D.C. Nelson, and B. Johnson. 2003. The Effects of Wetland Restoration on the Production and Bioaccumulation of Methylmercury in the Sacramento-San Joaquin Delta, California. Final report submitted to the CALFED Bay-Delta Program for the project: An Assessment of the Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed. University of California, Davis, Dept. of Environmental Science and Policy, Dept. of Wildlife, Fish and Conservation Biology, and Division of Microbiology; U.S. Fish and Wildlife Service, Division of Environmental Contaminants.

for the Cosumnes reach of the Mokelumne-Cosumnes subarea, the resulting annual load is 7.0 grams per year (g/yr) for the subarea compared to the 4.0 g/yr shown in Table 6.4 and 8.4c in the TMDL Report, which is 5% of overall (adjusted) loading to the Mokelumne-Cosumnes subarea (149 g/yr) compared to 3% of the overall loading shown in Table 8.4c (146 g/yr). This is not a substantial difference and does not alter our understanding of the nature of methylmercury source loading to the Mokelumne-Cosumnes subarea.

Sherman Island is located in the West Delta subarea of the Delta delineated for the methylmercury TMDL. If an open water sediment flux rate of 5 ng/m²/day is substituted for the West Delta subarea, the resulting annual load is 97 g/yr compared to the 190 g/yr shown in Table 8.4c in the TMDL Report, which is 41% of overall (adjusted) loading from sources within the West Delta subarea (237 g/yr) compared to 58% of the overall loading shown in Table 8.4c (330 g/yr). This is not a substantial change and does not alter our understanding of the nature of methylmercury source loading to the Mokelumne-Cosumnes subarea.

The sum effect of the alternate calculations for the Cosumnes and Sherman Island areas of the Delta results is an overall annual methylmercury load from open water sediment flux of 767 g/yr to the Delta/Yolo Bypass compared to 861 g/yr shown in Tables 6.2 and 6.4, which is 15% of overall (adjusted) loading from sources within the West Delta subarea (5,125 g/yr) compared to 17% of the overall loading shown in Table 6.2 (5,219 g/yr). This is an insubstantial change and does not alter our understanding of the nature of methylmercury source loading to the Delta/Yolo Bypass.

The alternate open water sediment flux in the West Delta subarea has no effect on the open water allocation or overall control strategy for the West Delta. Measured methylmercury concentrations in ambient water in the Central and West Delta subareas equal or approach the proposed aqueous methylmercury goal of 0.06 ng/l, resulting in the need for little-to-no reductions in methylmercury inputs to these subareas. In addition, methylmercury in these subarea inflows are expected to decrease substantially (e.g., 40-80%) as upstream methylmercury and mercury management practices take place because methylmercury source load reductions ranging from 44 to 80% are required for the upstream subareas to achieve their assimilative capacities. In addition, one of the primary within-subarea source of methylmercury in the Central and West Delta subareas is flux from open-water habitat sediments, even when the alternate open water sediment flux calculation is used for the West Delta; this contribution is expected to decrease as mercury reduction projects take place in the tributary watersheds that result in decreasing the mercury concentration of sediment deposited in the Central and West Delta subareas. Therefore, even if the alternate open water sediment flux calculation is used for the West Delta subarea, staff would continue to recommend that no reduction be required for point and nonpoint source methylmercury discharges within the West Delta subarea.

To determine whether the alternate Mokelumne-Cosumnes subarea annual methylmercury load from open water sediment flux would result in a different percent reduction for allocation calculations, Board staff entered the alternate load into Table 8.4c and repeated the calculations described in Section 8.1.3 in the TMDL Report. The alternate calculations result in a percent reduction for the open water allocation of 35.2%, virtually identical compared to the 35.7% used to calculate the allocation in the February 2010 TMDL Report. Such a small change occurs because (1) methylmercury loading from open water sediment flux – whether its 4 g/yr or 7/yr – is a very small portion of overall loading to the Mokelumne-Cosumnes subarea, and (2) the

same percent reduction is applied to all sources⁵ regardless of their size to calculate the allocations.

DWR Attachment Comment #35a

Section 6.3.3, Section 7.23 and throughout the TMDL Report:

a. Dredging and removal of contaminated sediment near industrial sites that have ceased discharge (such as mentioned in Table 3.2) is substantially different from maintenance dredging of deepwater ship channels and marinas. The former involves removal of the mercury source and exposes uncontaminated sediment below and the latter may not substantially change the mercury characteristics of the sediment exposed to the water column.

Response to DWR Attachment Comment #35a

Board staff concurs with the above comment, with two caveats:

(1) Areas where dredging takes place in the Delta are depositional in nature. As a result, dredging activities that take place at the same scale as past activities (e.g., during the last 10 years), are not expected to cause increases in *in situ* methylation at dredge sites. However, dredging in new reaches or to deeper depths than done in the past (e.g., to allow deeper-hulled cargo ships to access the Sacramento and Stockton ports⁶) potentially could expose new sediments that contain higher concentrations of total mercury, or affect the water residence time or other water characteristics in that river reach, which could result in increased methylmercury production in and flux from the sediment to the overlying water column or otherwise affect methylmercury concentrations in the water column.

(2) Maintenance dredging projects often involve the use of dredge material disposal (DMD) sites; at some sites the pore water from the dredge material is returned to surface waters. Current activities are a component of “existing” conditions. However, an increase in the amount of dredge material disposed at DMD sites (e.g., from the new Sacramento Deep Water Ship Channel deepening project, which plans to deepen the 43-mile ship channel by an additional five feet compared to past projects), would almost certainly increase the amount of methylmercury loading to the Delta because recent monitoring at five DMD ponds found that DMD ponds likely produce methylmercury (AMS, 2010⁷). Monitoring indicated the following:

- Average and median methylmercury concentrations in samples representing DMD pond outflows were about 10x to >100x higher than what is observed in receiving

⁵ Except atmospheric deposition and urban runoff outside of MS4s, which have allocations that are capped at existing loads.

⁶ For example, \$10 million was included in the 2010 Civil Works budget for re-launching the Sacramento Deep Water Ship Channel ship-deepening project. As noted on a May 2009 Port of Sacramento press release: “By deepening the 43-mile ship channel connecting the Port and San Francisco Bay from 30 feet to 35 feet along its entire length, more than 75 percent of fully loaded oceangoing freight ships will be able to directly serve the Sacramento region, compared to less than 40 percent currently. The channel-deepening project, which was initially started in 1989 but later stopped due to since-resolved utility issues, is scheduled to begin in 2010 with completion targeted for 2013. The federal Civil Works funding would support the first phase of construction.” (Citation: Port of West Sacramento. 2009. Port of West Sacramento Channel-Deepening Funding in President’s 2010 Budget. Port of Sacramento Press Release, 26 May 2009. Available at: <http://www.cityofwestsacramento.org/civica/inc/displayblobpdf2.asp?BlobID=3985>)

⁷ AMS. 2010. Methyl Mercury Monitoring in Dredged Material Placement Sites (Sacramento and San Joaquin DWSCs). Field report prepared for Ross Island Sand & Gravel Company and U.S. Army Corps of Engineers by Applied Marine Sciences (AMS). January 2010.

waters. Sacramento River and San Joaquin Rivers average 0.11 and 0.18 ng/l, respectively, per a recent CalFed study (Stephenson *et al.*, 2008⁸). Average DMD pond outflow methylmercury concentrations were 1.1, 1.5, 5.9, 9.6 and 20.8 ng/l for the five ponds.

- The methylmercury concentration in all sampled DMP site ponds increased above inflow levels during the monitoring effort, which likely indicates that methylmercury was produced at the sites.
- Methylmercury concentrations began to increase rapidly within approximately 1-2 weeks at most sites.

DWR Attachment Comment #35b

b. Dredging removes mercury with the top sediment, but possibly exposes formerly buried mercury-laden sediment to the water column. This may partially or fully negate the effect of dredging as an exporter of methylmercury from the delta.

Response to DWR Attachment Comment #35b

Staff concurs that dredging may expose formerly buried mercury-laden sediment to the water column. Also, to clarify, the effects of current dredging activities – e.g., export methylmercury from the Delta when sediment is removed (which may or may not affect the methylmercury production rates of open-water sediments in the dredged reaches), and import methylmercury when mercury-laden sediment is exposed or DMD ponds are employed that produce methylmercury (i.e., more methylmercury leaves the DMD ponds in return flows to receiving than enters the ponds in dredge material slurry) – are a component of existing conditions that result in the current Delta ambient water methylmercury concentrations. At the time the TMDL was developed (and today) there was not enough information to do a detailed mass balance for all possible ways that dredging activities could import and export methylmercury to the Delta. None-the-less, changes in dredging activities could cause increases or decreases in ambient methylmercury levels, depending on the nature of the changes.

DWR Attachment Comment #35c

c. The mass balance counts settling as removal, and then double counts the removal of this settled material via dredging as another removal.

Response to DWR Attachment Comment #35c

The removal of settled material via dredging was not double-counted. For example, the methylmercury mass balance is comprised of:

(1) The sum of identified load inputs from tributaries, flux from sediment in wetlands and open water habitats, NPDES facility discharges, urban runoff, irrigated agriculture return flows, and atmospheric deposition (Table 6.2 in the TMDL Report)

MINUS

(2) The sum of identified load exports by outflow to San Francisco Bay, dredging, the State Water Project and the Delta Mendota Canal (Table 6.15).

⁸ Stephenson, M., C. Foe, G.A. Gill, and K.H. Coale. 2008. Transport, Cycling, and Fate of Mercury and Monomethyl Mercury in the San Francisco Delta and Tributaries: An Integrated Mass Balance Assessment Approach. CalFed Mercury Project Final Reports. Available at: <http://mercury.mlml.calstate.edu/reports/reports/>

The methylmercury mass budget for the Delta/Yolo Bypass did not include exports (losses) due to photodegradation, particle settling or accumulation in biota because adequate data were not available to calculate these exports at the time the TMDL was developed (see Section 6.3.4 in the TMDL Report).

The difference between the sum of known inputs and exports is a measure of the uncertainty of the measurements and of the importance of other unknown processes at work in the Delta. As noted in Section 6.2 of the TML Report, the sum of WY2000-2003 water imports and exports balances within approximately 5%, indicating that all the major water inputs and exports have been identified. In contrast, as described in Section 6.4, the methylmercury budget does not balance. Exports are only about 50% of inputs, suggesting that the Delta acts as a net sink for methylmercury, even when dredging and other exports described in Table 6.15 are considered. Additional CalFed-funded studies of methylmercury in the Delta were completed after the TMDL was developed. These studies added to our knowledge of methylmercury loads from various sources during a wetter period, quantified losses through photodegradation and particle deposition, and estimated methylmercury loads in several tidal and non-tidal wetlands (Stephenson *et al.*, 2008). The results of these studies indicate that photodegradation rates and particle settling rates (even when the amount of removal from dredging is considered, which, is noted in Section 6.3.3, may be an overestimate) may be great enough to explain the ~50% difference between exports and imports identified by the TMDL Report. Some of the potential implications of the recent CalFed study results about loss processes in the Delta are discussed in Section 3.6 in Chapter 3 in the February 2010 TMDL Report. Staff will use data from the recent CALFED studies and other studies completed during Phase 1 of the proposed control program to revise the methylmercury source analyses for each Delta subarea as part of the proposed Phase 1 Program Review detailed in the draft Basin Plan amendments.

DWR Attachment Comment #35d

d. Updating the mass balance accordingly could change the calculated allocations for open water and other source types in Table 8.5.

Response to DWR Attachment Comment #35d

For the reasons explained in the previous responses, no corrections to the TMDL mass budget are needed.

DWR Attachment Comment #36

Linear relationship between inorganic mercury content of sediment and methylmercury production:

- a. Several locations of the TMDL staff report refer to methylmercury production as having a linear function with the inorganic mercury content of the sediment (e.g. Page 49 of the staff report). These statements do not appear to be supported by the data provided in Table 3.1 (on page 27 of the staff report). The table demonstrates that the R^2 for all habitats in the Delta is 0.2 and the R^2 for marsh habitat is 0.52. A linear relationship would be indicated by an R^2 value near 1.0.
- b. When considering dredging, the level of mercury in the newly exposed surface does not appear to be linearly correlated to the methylmercury contribution. When other factors are constant, MeHg production to Hg forms a linear relationship, but in the Delta environment, other factors appear to dominate, given the low R^2 scores. These other factors may include mercury speciation, grain size distribution, and microbial activity.
- c. Conclusions based on this premise (such as equation 6.3) may be inaccurate.

Response to DWR Attachment Comment #36

To clarify, there is a linear relationship after you factor in habitat type. Albeit, the slopes and intercepts for the methylmercury/inorganic mercury relationship would be different for data collected from, for example, sandy substrates compared to data collected from wetlands, because wetlands are typically sites of much greater methylmercury production. Conclusions based on the premise that there is a linear relationship between the inorganic mercury content of the sediment and methylmercury production are not “inaccurate” when habitat types are considered and when sediment mercury concentrations are less than 1 mg/kg. As noted in Section 3.3, the efficiency of the conversion of inorganic mercury to methylmercury was linear to about 1 mg/kg before commencing to level off, per the results of laboratory experiments and a study of 106 sites from 21 basins across the United States.

As noted in Section 6.3.3, although dredging projects have analyzed sediment samples for total mercury, none of the dredging projects at the time the TMDL was developed had analyzed sediment samples for methylmercury. To estimate the amount of methylmercury removed by dredging, Board staff used Equation 6.3 (see below) with the estimated annual total mercury load removed by dredging (see Section 7.2.3 for an explanation of how the total mercury load was estimated) and the average ratio of methylmercury to total mercury concentrations (MeHg:TotHg) in surficial sediment at several locations in the Sacramento and Stockton Deep Water Ship Channels. The MeHg:TotHg ratio is specific to surface samples collected in the deep water ship channels, where nearly 90% of all dredged materials from the Delta are removed. In addition, as shown in Table 6.17, the average dredge material total mercury concentrations observed for the different dredging projects in the Delta range from 0.027 mg/kg (dry weight) to 0.41 mg/kg, well below 1 mg/kg.

Equation 6.3:

$$\begin{array}{rcl} \text{MeHg Mass} & = & \text{Total mercury mass} * \text{MeHg:TotHg} \\ 341 \text{ g/yr} & = & 57 \text{ kg/year} * 1000 \text{ (g/kg)} * 0.006 \end{array}$$

As a result, the method employed by Board staff to estimate methylmercury loads removed by dredging addresses DWR’s concern about (a) potential inaccuracy resulting from the potential confounding effects that could have resulted if data that represents multiple habitat types were used and (b) the linear nature of the MeHg:TotHg relationship, because the sediment data used in the estimate are specific to dredged reaches, and because dredge material total mercury concentrations are substantially less than 1 mg/kg.

One way the estimate could be improved is if dredging projects would analyze methylmercury concentrations of the dredge material throughout the depth of the material removed. Use of surficial sediment MeHg:TotHg to estimate methylmercury mass removed by dredging assumes that MeHg:TotHg is consistent throughout all depths of sediment in the dredged areas, which may overestimate the mass removed if methylmercury levels actually decrease with depth, which is likely given maximum methylmercury production occurs at the oxic-anoxic boundary in sediment, usually several centimeters below the surface. In the staff reports, Board staff recommended that dredgers conduct additional sediment methylmercury monitoring during Phase 1. Staff would use dredging data from Phase 1 studies and other dredging monitoring efforts to revise the estimate of methylmercury mass removed by dredging activities as part of the proposed Phase 1 Program Review detailed in the draft Basin Plan amendments.

Department of Water Resources Attachment 2:

Attachment 2 is the February 2010 draft BPA with DWR suggested revisions noted in track changes. All revisions described in Attachment 2 were addressed by Board staff responses to DWR comments provided in the DWR letter and Attachment 1, except for the following three comments.

DWR Attachment Comment #37

Requirements for State, Federal, and Other Agencies: Top of Page 11, partial paragraph:

allocations. Agencies responsible for ~~water management and flood management activities in~~ the Delta and Yolo Bypass include, but are not limited to, Department of Water Resources, State Lands Commission, Central Valley Flood Protection Board, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers (USACE), and the State Water Resources Control Board. ~~These agencies, when implementing or approving proposed projects under their jurisdiction, shall require entities implementing the projects to conduct control studies and to implement actions to minimize ambient methylmercury concentrations.~~ These agencies may conduct their own coordinated Control Studies or may work with the other stakeholders in comprehensive, coordinated Control Studies.

The responsible agencies should coordinate with wetland and agricultural landowners during Phase 1 to characterize existing methylmercury discharges to open waters from lands immersed by managed flood flows and develop methylmercury control measures.

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Response to DWR Attachment Comment #37

DWR requests edits to clarify the authority of the Agencies. The comment is moot since staff has revised the BPA to remove this requirement.

DWR Attachment Comment #38

Requirements for State, Federal, and Other Agencies: Page 11, second full paragraph:

~~The Regional Water Board will enter into MOUs with the State Lands Commission, Central Valley Flood Protection Board, Department of Water Resources, and others to conduct Control Studies and evaluate options to reduce methylmercury in open waters resulting from floodplain areas inundated by flood flows. Evaluations shall include inorganic mercury reduction projects. One of the goals under the MOUs will be to identify, and pursue adequate resources to fund the Control Studies. Regional Water Board staff will work with the agencies in conducting these studies and evaluating potential mercury reduction actions.~~

New wetland, floodplain, and other aquatic habitat restoration and enhancement projects, including but not limited to projects developed, planned, funded, or approved by individuals, private businesses, non-profit organizations, and local, State, and federal agencies such as USACE, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration Fisheries, U.S. Environmental Protection Agency, U.S. Bureau of Reclamation, State Water Board, California Department of Water Resources, and California Department of Fish and Game, shall comply with all applicable requirements of this program, including conducting or participating in Control Studies and complying with allocations ~~that will be determined after Phase 1 studies.~~ To the extent allowable by their regulatory authority, Federal, State, and local ~~agencies that fund, approve, or implement such new projects shall direct project~~

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Response to DWR Attachment Comment #38

DWR requests edits to provide for a Memorandum of Understanding (MOU) with the responsible state and federal agencies to conduct the elements required of them under the BPA. Staff is not recommending these edits. The BPA provides for an adaptive management framework with stakeholder involvement.

DWR Attachment Comment #39

Recommended for Implementation by the State Water Board, Item 1: Page 16:

Delta Mercury

1. The State Water Board should consider requiring methylmercury controls for new water management activities that have been identified as causing an increase in ambient methylmercury levels as a condition of approval of any water right action required to implement the project. The State Water Board Division of Water Rights should consider requiring the evaluation and implementation of feasible management practices to reduce or, at a minimum, prevent methylmercury ambient levels from increasing from those changes in water management activities and flood conveyance projects that are known to cause increased methylmercury levels. The State Water Board should consider funding or conducting studies to develop and evaluate management practices to reduce methylmercury production resulting from existing water management activities or flood conveyance projects.

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Response to DWR Attachment Comment #39

DWR's edits would change the recommendation to the State Water Board to implement its authority for activities that are causing an increase in methylmercury levels. The original BPA text was a recommendation to the State Water Board to implement its authority for activities that are expected to cause an increase in methylmercury levels and for water management activities and flood conveyance projects.

Staff is proposing changes to the draft BPA that, while different than the suggested edits, address DWR's concerns.

4. California State Lands Commission (CSLC)

Paul D. Thayer (Executive Officer)

1 April 2010

CSLC Comment #1.

Staff of the California State Lands Commission (Commission) has participated in the Delta Methylmercury TMDL and Basin Plan Amendment Stakeholder group for the past year, and we want to thank the Regional Board for the opportunity to join in this process. While we appreciate the Regional Board's approach to include the stakeholders and the public in this process, we feel the path chosen by the Regional Board is not the most effective way for confronting methylmercury in the Delta.

The Delta Methylmercury TMDL and Basin Plan Amendment include an implementation plan that seeks to reduce the sources of methylmercury located on lands in the Delta. Lands under the Commission's jurisdiction involve sovereign lands (*aka* "public trust lands") of the State of California held in trust for the people of California to be used to promote the public's interest in water oriented and water dependent needs and uses. These sovereign lands were acquired by California on September 9, 1850 as an incident of being admitted into the Union as a sovereign state. In 1938 the California Legislature placed these sovereign lands under the newly created State Lands Commission's jurisdiction.

Although the Basin Plan Amendment does not specifically identify the Commission as a non-point source discharger, it treats the Commission as such by assigning a methylmercury allocation to the Commission together with the Department of Water Resources and the Central Valley Flood Protection Board, as managers of open water areas in the Yolo Bypass and Delta. The allocation is described as corresponding to the methylmercury load that fluxes to the water column from sediments in open-water habitats within channel and floodplains in the Delta. While the Commission does have jurisdiction over some of the land located in the Delta, these lands are sovereign land owned by the people of the State of California. The Basin Plan Amendment should be clarified to reflect that the State of California owns the natural beds of its tidal and navigable waterways, including those in the Delta, and is the recipient of discharges of waterborne pollutants made by point and non-point source dischargers into the State's waters.

Response: The Central Valley Water Board appreciates the participation of the California State Lands Commission. The draft BPA assigns the state and federal agencies responsibility for methylmercury loads that enter the water column from the sediments within channels and floodplains in the Delta and Yolo Bypass. The draft BPA does not make the state and federal agencies responsible for the contaminated sediments in the channels and floodplains which may have been discharged by point and non-point source dischargers into the State's waters.

The Central Valley Water Board recognizes that the State and Federal Agencies, including the Commission, have jurisdiction for some lands located in the Delta but may have limited ability to control activities. Therefore, the BPA requires the Agencies to conduct Control Studies and evaluate options to reduce methylmercury production in open water under the jurisdiction of the Commission. This will provide information that Central Valley Water Board staff will use during the Phase 1 evaluations to further refine the responsibilities of the State and Federal Agencies.

CSLC Comment #2.

The assignment by the Basin Plan Amendment of a methylmercury allocation to the Commission would obligate the Commission to include requirements for future projects, conduct control studies, conduct compliance monitoring and implement methylmercury reductions as necessary to comply with allocations by 2030. More immediately, the Commission would be required to conduct control studies and evaluate options, including inorganic mercury reduction to reduce methylmercury production in open waters under the Commission's jurisdiction. Compliance monitoring of land in the Delta is to begin within two years of starting Phase 2 and annual reports are to be submitted to the Regional Board. The Basin Plan Amendment suggests that the Commission may be able to satisfy monitoring requirements by participating in a regional monitoring program.

Although the Commission manages certain sovereign lands located in the Delta on behalf of the state, it has neither the legal authority nor the financial authorization to regulate many of the variables that affect methylation rates of mercury on those lands. Factors such as the rate of water flow, turbidity, and the chemical constituents of the water are beyond the Commission's authority and are regulated by other state or federal agencies. The Commission does not control how much water is flowing through the Delta and its channels or the quality or content of the water. In fact the Commission has sought legislation to amend Public Resources Code Section 6327 to give it the authority to require an application for a permit to construct drainage facilities into navigable rivers, streams, lakes and bays. Presently if a discharger has a permit from a local reclamation district, the Reclamation Board, the Department of Water Resources, the California Debris Commission or the Corps of Engineers, the Commission is barred from requiring an application. The Legislature has not approved such an amendment. From 1893 through 1986 the responsibility for controlling the flow of material into California's rivers flowing into the Delta was placed under the authority and responsibility of the California Debris Commission. As such, the State Lands Commission has lacked and continues to lack the ability to prevent discharges that have caused or continue to cause mercury to accumulate in the Delta or to significantly reduce the methylation of the legacy and ongoing accumulation of mercury that exists in the Delta.

Response: The draft BPA has been revised to remove provisions that State and Federal Agencies require projects under their jurisdiction to implement mercury reduction activities. The BPA continues to direct the State and Federal Agencies to include requirements for projects under their authority to conduct Control Studies and implement methylmercury reductions as necessary to comply with allocations by 2030. The BPA does not require the State and Federal Agencies to control projects that are outside their authority. The BPA also requires the State Lands Commission, Central Valley Flood Protection Board, and Department of Water Resources to conduct Control Studies and evaluate options to reduce methylmercury production in open water under the jurisdiction of the State Lands Commission. This will provide information that Central Valley Water Board staff will use during the Phase 1 evaluations to further refine the responsibilities of the State and Federal Agencies.

CSLC Comment #3.

In addition to the previously discussed obligations, the Basin Plan Amendment states that “methylmercury dischargers in the Delta and Yolo Bypass shall participate individually, through their representatives, or through an appropriate entity, in the development and implementation of an Exposure Reduction Program to reduce mercury exposure of people who eat Delta fish.” The dischargers, individually or in the form of a stakeholder group, must work with those in affected communities, community organizations and public health agencies to formulate an exposure reduction workplan.

Then the dischargers must implement the plan and submit progress reports every three years to the Regional Board’s Executive Officer. We understand that the Regional Board and the Department of Fish and Game, which regulates the taking of fish, have effective control over these issues.

Insofar as the Commission’s budget is controlled by the Legislature and Governor, the Commission would like to restate that we lack the necessary funding to undertake the tasks that the proposed Basin Plan Amendment assigns to the Commission. While the Commission represents the state as owner of the sovereign lands covered by navigable waterways, the Commission is not in a position to undertake the kinds of projects you suggest without adequate funding. Currently, the Commission does not have staff or expertise to conduct the control studies or monitoring contemplated in the Basin Plan. Furthermore, in the event that funding was to become available, whether to undertake such a project as suggested in the proposed plan would be a decision that must be left to the discretion of the Commission.

Response: The draft BPA requirements for state agencies is consistent with Section 13247 of the California Water Code which states, “State offices, departments and boards, in carrying out activities which affect water quality, shall comply with water quality control plans approved or adopted by the state board unless otherwise directed or authorized by statute, in which case they shall indicate to the regional boards in writing their authority for not complying with such plans.” The California Water Code does not allow other state agencies to use funding as the reason not to comply with a water quality control plan. The draft BPA requires the Commission and the other state and federal agencies to conduct control studies and Central Valley Water Board staff is directed to work with the agencies to develop the studies and evaluate potential mercury and methylmercury control actions.

CSLC Comment #4.

Currently, the proposed Basin Plan Amendment places the bulk of the responsibility on individual stakeholders to formulate a plan for conducting control studies. This seems to limit the role of those with expertise and experience in dealing with California’s water quality problems. The staff of the Regional Water Board have the expertise in water quality testing and monitoring, not the staff of the State Lands Commission. The Regional Water Board is uniquely positioned and should take the lead in deciding what control studies should be carried out and crafting reasonable a solution to the high levels of methylmercury in the Delta. Instead of assigning responsibility to individual State agencies, a more comprehensive solution may be to deal with the California natural resource agencies in a coordinated fashion. Each of the agencies is responsible for resources that are inextricably linked to the others and collectively have an impact on methylmercury levels in the Delta. Since the natural resource agencies are all trustees for the people of the State of California, it seems more efficient to approach the agencies as a group for seeking funding and developing a strategic approach for the State of California to participate in reducing methylmercury in the Delta.

Response: The BPA requires the State and Federal Agencies to conduct their own coordinated Control Studies or may work with the other stakeholders in comprehensive, coordinated Control Studies. So, the Agencies are free to conduct the studies as a group. In addition, the Central Valley Water Board recognizes the water quality expertise of staff so the BPA states that Regional Water Board staff will work with these agencies in conducting studies and evaluating potential mercury reduction actions.

CSLC Comment #5.

The Commission staff would like to thank the Regional Board again for involving us in the process of developing the Basin Plan Amendment. We urge the Regional Board to support your staff in continuing to work with the conclusions, recommendations, and decisions on sound scientific evidence and the reasonable protection of beneficial uses, as required under the Water Code. Additionally, we urge you to help seek funding that will assist the Stakeholder group to work together in the future. We look forward to improving upon this collaborative stakeholder model for developing future TMDLs in the region.

Response: The Central Valley Water Board appreciates the participation of the California State Lands Commission. The draft BPA and the resolution directs staff to continue working with stakeholders during the Phase 1 activities and to conclude Phase 1 with a review that considers modification of methylmercury goals, objectives, allocations and/or the Final Compliance Date; implementation of management practices and schedules for methylmercury controls; and adoption of a mercury offset program for dischargers who cannot meet their load and waste load allocations after implementing all reasonable load reduction strategies. The BPA includes a recommendation that the State Water Board consider funding or conducting studies to develop and evaluate management practices to reduce methylmercury production resulting from existing water management activities or flood conveyance projects and a recommendation that the State of California should establish the means to fund a portion of the mercury control projects in the Delta and upstream watersheds.

5. Delta Protection Commission (DPC)

Linda Fiack (Executive Director)

Letter date: 5 January 2010

DPC comments are in reference to the 8 December 2009 draft Basin Plan amendments.

DPC Comment #1.

The staff of the Delta Protection Commission (Commission) has reviewed the subject document and is providing these comments as relates to consistency with the Policies of the Land Use and Resource Management Plan for the Primary Zone of the Delta (Management Plan) adopted pursuant to the Delta Protection Act. Previous letters of comment provided by the Commission, (including those on behalf of the Delta Mercury Collaborative) on April 24, 2008; July 3, 2008; and September 15, 2009 are attached for your reference.

Response: Central Valley Water Board staff responded to DPC comments (on behalf of the “Delta Mercury Collaborative” provided in their 24 April 2008 letter) when responding to all stakeholders’ comments on the February 2008 draft Basin Plan amendments and staff report, which are provided under separate cover.

The 3 July 2008 DPC letter to Board Executive Officer Pamela Creedon provided comments and recommendations on behalf of the Delta Mercury Collaborative, Central Valley Clean Water Agencies, and the Northern California Water Association, for the formal stakeholder process after the April 2008 Board hearing meeting. The Board Executive Officer and staff incorporated all of their recommendations in the planning and implementation of the formal stakeholder process.

The DPC 15 September 2009 letter presented comments for the 2 September 2009 draft Basin Plan amendments released for stakeholder review. Board staff responded to their comments in a table that includes staff responses to all stakeholder comments received through 3 February 2010; this table is available in the Administrative Record for the development of this control program and at the following Board website:

http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_meetings/2009oct1/24sep09_bpa_com_tbl.pdf

The 15 September 2009 letter had these comments:

While it appears for the most part that comments provided to the Control Board have been taken into consideration, it is requested that the following two comments previously provided also be taken into consideration:

- Enhance language to specifically address benefit/cost analysis that takes into account the costs to reduce mercury by beneficial activities in the Delta such as habitat creation, flood control, agriculture, wastewater treatment and dredging;
- Creation of a funding burden to in-Delta interests for an environmental legacy issue of statewide concern and a lack of funding to accomplish objectives.

Staff responded in the 3 February 2010 table in rows 13 and 30, respectively:

Row 13: Rows 7 and 10 have edits to address the evaluation of potential benefits and impacts of methylmercury controls. The staff report includes cost considerations for the methylmercury studies and potential controls. Porter Cologne does not require a cost-benefit analysis. One of the difficulties of doing a cost-benefit analysis is that it is difficult to determine the dollar value of an uncontaminated fish, or the dollar value to a threatened or endangered species' ability to consume an uncontaminated fish, or the value of allowing human subsistence fishers to consume locally caught fish. Likewise, we do not know the dollar value of a Delta smelt or a wetland restored to protect the smelt. Granted, stakeholders would be able to provide the costs and economic benefits of projects such as flood control, agriculture, wastewater treatment, and dredging.

As staff discussed with DPC staff, identifying external sources of funding is a priority and will be discussed during development of the Memorandum of Intent (MOI). The MOI may contain specific strategies and possible funding sources, but the Basin Plan amendment language will not.

Row 30: Funding is a significant issue for all of the sources assigned responsibility for the study and management of methylmercury and total mercury. The BPA does not provide funding for the studies or management efforts. Completing the studies will be the responsibility of the sources contributing to MeHg discharges. A topic for the stakeholder group needs to include developing a funding strategy, including a strategy for requesting funding from the state and federal governments.

DPC Comment #2.

While it appears for the most part that comments provided have been taken into consideration in the latest draft, it is requested that the following comment previously provided also be taken into consideration:

- Include language to specifically address the funding burden to in-Delta interests for an environmental legacy issue of statewide concern and a lack of funding to accomplish objectives.

Thank you for the opportunity to provide input into your process to develop a Mercury TMDL program for the Delta. Please contact me at (916) 776-2292 or linda.fiack@delta.ca.gov if you would like to discuss comments provided herein.

Response: Please see above responses to DPC's September 2009 letter. In addition, Board staff included a review of economic factors as part of the environmental analysis in Chapter 7 of the February 2010 draft BPA Staff Report (see Section 7.4) that recognizes the potential economic impacts on municipalities, wetland managers, agriculture, and other entities required to conduct methylmercury control studies, monitoring, and methylmercury management practices. Section 7.4 also identifies a variety of different funding sources that could contribute towards study, monitoring and implementation costs:

- Developing a project for consideration as a Supplemental Environmental Project;
- State or federal grants or low-interest loan programs;
- Single-purpose appropriations from federal or State legislative bodies;
- Bonded indebtedness or loans from governmental institutions;
- Surcharge on water deliveries to lands contributing to a methylmercury or total mercury discharge;
- Ad Valorem tax on lands contributing to a methylmercury or total mercury discharge;
- Taxes and fees levied by a water district created for the purpose of drainage management; and
- U.S.D.A. Agricultural Stabilization and Conservation Service.

Also, the draft BPA incorporates several components that were developed with input from stakeholders during the formal stakeholder process after the April 2008 hearing meeting that may enable parties responsible for conducting studies and implementing monitoring and control actions to reduce economic impacts:

- The draft BPA incorporate a phased, adaptive management approach for the implementation of the proposed Delta mercury control program that includes evaluating additional information as it becomes available and adapting the control program so that effective and efficient actions can be taken that minimize the potential for adverse environmental and economic effects. The proposed amendments include language that commits the Board to conducting a "Delta Mercury Control Program Review" after the Phase 1 studies are completed and TMDL control programs for the major tributary inputs are developed. The Program Review includes assessing:
 - The effectiveness, costs, potential environmental effects, and technical and economic feasibility of potential methylmercury control methods;
 - Whether implementation of some control methods would have negative impacts on other project or activity benefits;
 - Methods that can be employed to minimize or avoid potentially significant negative impacts that may result from control methods;
 - Implementation plans and schedules proposed by the dischargers; and
 - Whether methylmercury allocations can be attained.
- As part of the Program Review, the Board could consider modifications to the Delta mercury control program, including potential modifications of the allocations so that sources without feasible and reasonable methylmercury control methods may have their allocations adjusted to a feasible level, and sources that can more readily implement

feasible and reasonable methylmercury control methods may be required to make greater reductions.

- The proposed amendments include specific language that allows dischargers to conduct control studies using a stakeholder group approach or other collaborative mechanism, instead of requiring individual studies.

Further, legacy¹ mercury may comprise only about 30% of total mercury entering the Delta [“Staff’s Initial Responses to Board and Stakeholder Questions and Comments at the April 2008 Hearing”² (see item A-1, pages 3 through 12)]. In addition, even if control actions are implemented to remediate legacy mercury in the Delta’s tributary watersheds, it would likely take natural processes many centuries to completely remove the legacy mercury already in Central Valley river beds and channels. Evidence supporting this assertion comes from the source analysis of total mercury that continues to enter the Delta years after the mercury and gold mining period and studies of contaminated sediment transport conducted elsewhere. The magnitude of legacy, mine-related mercury spread through river beds and banks downstream of major dams that continues to erode the Delta and difficulties in controlling these loads is discussed under Question #1 (page 3) and additional discussion about the time needed for natural processes to flush in-channel sediments from the Delta are included under Item #22 (page 44) in staff’s “Initial Responses to Comments at the April 2008 Hearing”.

As a result, even if legacy mercury loads could be reduced to zero, we would still need to be concerned about activities in and around the Delta that contribute methylmercury. Given available information about wetland restoration goals for the Delta (e.g. the Record of Decision (ROD) for the California Bay-Delta Authority commits it to restore 75,000 to 90,000 acres of additional seasonal and permanent wetlands in the Delta, which represents about a three to four times increase in wetland acreage from current conditions (about 21,000 acres)), and their potential to increase methylmercury loading to the Delta, we need to have a mercury control program that is more comprehensive and protective of the environment and subsistence fishers who cannot wait for centuries for improvements.

¹ Board staff refers to mercury from historic mining operations in the Coast Ranges and Sierra Nevada that was released to Central Valley waterways by historic operations as well as by past and present erosion of excavated overburden and tailings as “legacy mercury”.

² Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/stakeholder_meetings/25nov08_hearing_rtc.pdf