From: Goforth, Kathleen
Sent: Wednesday, July 03, 2013 11:37 AM
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Subject: EPA's Comments on BDCP ADEIS

Thank you for the opportunity to review the Second Consultant Administrative Draft Environmental Impact Statement (ADEIS) for the Bay Delta Conservation Plan (BDCP). The purpose of the general comments below is to highlight some of EPA's key concerns surrounding the proposed BDCP and ADEIS. We are providing these comments on the ADEIS for the proposed project in accordance with our role as cooperating agency for this process under the National Environmental Policy Act (NEPA). As requested, we are also providing detailed comments in the table format provided by the Bureau of Reclamation (see attached).

EPA fully understands the urgency of solving water supply and ecosystem problems facing the Bay Delta. We agree that the status quo is not sustainable and that a successful BDCP can be a key part of a comprehensive strategy to address the wide range of problems threatening both water supply reliability and the Bay Delta ecosystem.[1] Given the importance and complexity of this project, we appreciate this opportunity for early input. At the same time, we must note that this is a unique process. EPA does not typically review NEPA documents concurrent with the lead agency review.

We are aware that the lead Federal agencies have identified significant concerns in their recent Progress Assessments.[2] We also recognize that the Habitat Conservation Plan (HCP), which is incorporated by reference into the ADEIS, and the Preferred Alternative, evaluated in both, are works in progress. Accordingly, we anticipate substantial revisions to the documents as the lead agencies make revisions to the proposed project and analyses leading up to the publication of the DEIS. Finally, we note that this DEIS is intended to be a programmatic level analysis of the HCP as a whole, but also a site-specific analysis of the proposed tunnel export facility. This approach is unusual, and great clarity is needed in the DEIS to ensure that decision makers and the interested public are not confused by the different levels of analysis.

EPA has reviewed the ADEIS to the extent that workloads and scheduling allowed; however, given the evolving nature of the BDCP, the comments that we are submitting today should not be considered a comprehensive list of all EPA concerns and input related to this project. In this email, we are raising issues and making recommendations in eight key areas based on a focused review of the Preferred Alternative in the ADEIS: Alternatives Analysis; Adverse Impacts on Water Quality; Aquatic Species and Scientific Uncertainty; Impacts on Fish Populations; Programmatic vs. Project Level Analysis; Climate Change; Adaptive Management and Mitigation Commitments; and CWA Section 404. More detailed comments and recommendations are provided in the attached table. EPA will continue to participate in discussions with the co-lead and other cooperating agencies in the months ahead to assist in resolving these and other issues as the DEIS development proceeds. Pursuant to our independent review responsibility under Section 309 of the Clean Air Act, we will also review and comment on the DEIS when it is released for public review and comment.

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[1] See p. 21-22 of EPA's 2012 Action Plan http://www2.epa.gov/sites/production/files/documents/actionplan.pdf
[2] http://baydeltaconservationplan.com/BDCPPlanningProcess/DocumentsAndDrafts.aspx

I. Alternatives Analysis

The NEPA process is intended to help public officials make decisions that are based on an informed understanding of environmental consequences (40 CFR 1500.1(c)). Critical to this is a clear comparison of the impacts of the project alternatives. While the ADEIS contains a wealth of information and many project-level details, it does not clearly distinguish between alternatives with regard to their impacts. The ADEIS generally divides the impacts analyses for the numerous water quality constituents into two subsections: direct project-level impacts from facilities operations, and indirect programmatic-level impacts from tidal and nontidal marsh restoration and other conservation projects. Construction-related impacts and cumulative impacts are discussed in their own separate sections. The ADEIS further divides the direct project-level impacts into three subcategories based on location, i.e., upstream, in Delta, and export service area. Furthermore, all of this is done for each of the ten alternatives, including the No Action alternative, overlaid with the eleven different operational scenarios A-H4. No comprehensive comparison of alternatives is provided.

While Chapter 11's Summary of Effects compares each alternative's impacts on fish and aquatic resources to those of the Preferred Alternative, we found such comparisons to be of limited value. A more appropriate and informative approach would be to compare each alternative to the No Action alternative with regard to all impacts. We also recommend that the DEIS clarify cause-and-effect relationships between alternatives and impacts and include a comprehensive assessment of the relative magnitude and causes of the predicted decreases in water quality.

The DEIS should sharply distinguish between alternatives and evaluate their comparative merits, consistent with 40 CFR 1502.14(b). The linkages between impacts and their primary causes should be clearly identified, as these are critical to the development of appropriate and effective mitigation strategies. For example, a percentage decrease in salinity at the Jones and Banks pumping plant should be interpreted to make it meaningful, i.e., the DEIS should explain what aspect of the project would cause this. Would this occur because more water would be pumped from the Sacramento River pursuant to certain operations criteria? Would it be the result of increased or decreased flows at Vernalis due to climate change? Why would this impact be the same for all the Alternatives? (p. 8-424).

Changes in Delta hydrology can influence water quality across a broad range of constituents. All of the waterways of the Bay Delta are water-quality impaired for one or more constituents.[3] In our scoping comments for the BDCP, we suggested that the EIS evaluate the effect of the alternatives on the salinity regime ("X2") and other constituents including boron, total organic carbon, dissolved oxygen, pesticides, mercury, selenium, ammonia and dissolved oxygen.[4] These parameters were selected through a multiagency and stakeholder effort to identify water quality indicators of highest relevance to protecting the beneficial uses of waters in the Bay Delta system. The ADEIS provides many of the water quality analyses suggested in our scoping letter; however, the following significant improvements are needed to adequately support informed decision making:

- First, the DEIS should evaluate each alternative's expected impacts to determine whether the narrative and numeric water quality standards would be met.

- Second, the DEIS should provide a consistent level of evaluation for each of the parameters across the alternatives and sharply compare the alternatives.

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[3] http://www2.epa.gov/sites/production/files/documents/actionplan.pdf
[4] http://www2.epa.gov/sites/production/files/documents/epa_comments_bdcp_3rdno_051409.pdf

- Third, the DEIS should provide a comprehensive evaluation and comparison of impacts each alternative will have on the quality and quantity of the Bay Delta's aquatic habitats. These habitats are comprised of a mosaic of aquatic and terrestrial features, and occur along a continuum from tidal sloughs to open water, and along a salinity gradient spanning the Estuary. The habitats are essential for the reproduction and survival of migratory and resident fish populations.

  Evaluations of aquatic habitats should focus on each alternative's impact on salinity gradients, dissolved oxygen, and/or hydrodynamics. Evaluating the changes to the salinity gradient throughout the year would provide information about the quality and quantity of salinity zones preferred by key fish species for all or parts of their life cycles. Similarly, the DEIS should evaluate potential changes in dissolved oxygen levels and hydrodynamics affecting the continuity and integrity of migratory corridors, which would either improve or degrade the ability of migratory fish to successfully reach the ocean and return to spawning sites. Such information is essential for understanding how each alternative would benefit or negatively impact fish populations.

II. Adverse Impacts on Water Quality

Chapter 8 of the ADEIS indicates that, as proposed, all project alternatives of the BDCP would result in adverse effects to one or more beneficial uses within the affected water bodies. Although incomplete, the material in the ADEIS suggests that the Preferred Alternative would have significant unmitigated adverse impacts on water quality in the Delta. For example:

- The proposed changes in water management would measurably exacerbate impairment of agricultural and aquatic life beneficial uses in the South Delta and Suisun Marsh (p. 425);
- Bromide, chloride, DOC, and salinity/EC levels are expected to increase due to seawater intrusion as a result of both climate change and the implementation of the Preferred Alternative (p. 8-407, 415, 425, 442). In addition, the effectiveness of mitigation actions for salinity/EC is uncertain (p. 426) making it difficult to understand the net effect to salinity/EC levels;
- Mercury, pesticide, and selenium exposure levels may increase and be cumulatively significant (p. 730); and
- Water quality degradation resulting from the increased pumping of freshwater from the North Delta could cause increases in water treatment costs (p.8-408).

As noted in EPA's Bay-Delta Action Plan, most of the water quality constituents identified above are already important stressors on the beneficial uses of the Delta. For example, sport fish in the Delta are already burdened with higher concentrations of mercury than anywhere else in the State,[5] and the occurrence of this powerful neurotoxin in the food web poses a threat to public health and the ecosystem as a whole. The State Water Resources Control Board (State Water Board) has observed that when the Yolo Bypass is flooded, it becomes the dominant source of methylmercury to the Delta, and that

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[5] SWAMP- Surface Water Ambient Monitoring Program
http://www.waterboards.ca.gov/water_issues/programs/swamp/rivers_study.shtml

restoration activities could exacerbate the existing mercury problem.[6] While EPA strongly supports restoration of aquatic habitat in the Delta, care must be exercised to ensure that there are not unintended consequences of restoration actions that adversely affect water quality. The DEIS must include appropriate mitigation measures to address projected adverse impacts on water quality to ensure that beneficial uses would be protected.

The ADEIS appears to evaluate a broad range of construction elements for Conservation Measure 1 (CM1); however, the operational elements appear to be very similar to one another (Table 3-6 p. 3-33). Pursuant to its Strategic Plan, the State Water Board has recently initiated a review of the Bay Delta Water Quality Control Plan (Bay Delta WQCP), including an effort to update the flow standards that define freshwater flows through the Delta. It is reasonable to anticipate that several such State Water Board reviews, as well as significant changes in the regulatory regime affecting Delta exports and outflow, would occur during the fifty-year term of the HCP permit. Given the limited variability of the operational scenarios presented in the ADEIS, the extent to which the operation of CM1 would be able to adjust to such changes is not clear. The DEIS should explain how the operations plans for the BDCP would be adjusted to account for any new regulatory provisions prior to or during the life of the permit.

III. Aquatic Species and Scientific Uncertainty

Compared to the No Action alternative and existing conditions, many of the scenarios of the Preferred Alternative "range" appear to decrease Delta outflow (p. 5-82), despite the fact that several key scientific evaluations by federal and State agencies indicate that more outflow is necessary to protect aquatic resources and fish populations.[7] In addition, recent technical reports and emerging research raise questions about whether the proposed restoration of tidal marsh is feasible,[8] possible[9], or effective.[10] These are scientific questions about the assumptions used to support restoration proposals and projections of anticipated benefits to fish populations. We understand that the lead Federal and State agencies and project proponents are engaged in discussions to identify and resolve these scientific issues. Such scientific

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[6] P. 29 Periodic Review of the 2006 Water Quality Control Plan, State Water Resource Control Board http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/periodic_review/docs/periodicreview2009.pdf

[7] State Water Resources Control Board's, 2010 Flows Report, p.2.

"Interior remains concerned that the San Joaquin Basin salmonid populations continue to decline and believes that flow increases are needed to improve salmonid survival and habitat." USFWS May 23, 2011 Phase I Scoping Comments, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts052311/amy_aufdemberge.pdf

"Inadequate flow to support fish and their habitats is directly and indirectly linked to many stressors in the San Joaquin river basin and is a primary threat to steelhead and salmon." NMFS February 4, 2011 Phase I Scoping Comments, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts020811/010411dpowell.pdf

"…current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Executive Summary in 2010 CDFG Flow Criteria.

"a strong majority of scientists prioritizes habitat and flow management actions that would restore more natural processes within and upstream of the delta" (p. 2) http://www.ppic.org/content/pubs/report/R_413EHR.pdf

[8] NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document (04/4/2013), page 15.

[9] U.S. Fish and Wildlife Service Staff BDCP. The broad concern is that the tidal prism would be diminished over time by the large increases in tidal habitat..

[10] Lucas, L. V., and J. K. Thompson. 2012. Changing restoration rules: Exotic bivalves interact with residence time and depth to control phytoplankton productivity. Ecosphere 3(12):117. http://www.esajournals.org/doi/pdf/10.1890/ES12-00251.1. The issue raised is whether the increaseed prodcution of plankton by the restored wetlands would be offset by the increased consumption by exotic bivalves as they spread into the restored wetlands..

uncertainties should be disclosed and described in the DEIS, pursuant to NEPA regulations at 40 CFR 1502.22 and 1502.24.

IV. Impacts on Fish Populations

Federal and State agencies have been directed to make all reasonable efforts to at least double the natural production of anadromous fish in California's Central Valley streams on a long-term, sustainable basis.[11] The State has adopted this doubling goal as a water quality objective in its WQCP.[12] The ADEIS estimates, for all alternatives, the water supply benefits to those who receive water from the Central Valley Project (CVP) and State Water Project (SWP) under contract with Reclamation and DWR, respectively (p. 5-83), but provides no estimates of impacts on the sizes of imperiled fish populations that would result from the construction and operation of any alternative, nor under existing and no action conditions. EPA recommends that the DEIS provide a forecast of the potential responses of fish populations to the alternatives, based on a review of available scientific literature.[13] The DEIS should disclose how each alternative would achieve numeric targets associated with federal and State goals for increasing fish populations.

V. Programmatic vs Project Analysis

The ADEIS states that it takes a programmatic approach toward evaluating all elements of the HCP except for CM1 (the proposed new intakes, twin tunnels, and other infrastructure for new water conveyance), for which the ADEIS states that it takes a project-level approach. The level of engineering detail provided for the tunnels, however, is not commensurate with the level of site-specific information typically provided in an EIS for a project that will require federal permits.[14] For example, actions (such as grading, dredging, trench and fill, boring, spoils piles, levee work, excavation) that result in impacts to aquatic resources are not detailed (i.e. acres and/or linear feet of estimated impacts to waters of the US, volume of sediment proposed for disposal sites Part 3, p. 12-22). Thus, it is difficult to fully assess the project-level impacts and mitigation opportunities, and it is not clear whether the project, as proposed, would satisfy requirements for requisite authorizations and permits. We recommend that the DEIS provide a level of detail that supports meaningful calculations of anticipated direct and indirect effects of the project-level elements, and clarify whether this EIS is meant to support a permit decision for CM1.

VI. Climate Change

We appreciate the substantial consideration that climate change has been given in this document. Climate change impacts (sea level rise, shifts and timing of precipitation and snowpack, etc.) have been modeled and incorporated into the No Action and all the Action Alternatives. Project impacts (from the proposed construction and operation of the new conveyance, as well as the other restoration measures) have thus

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[11] 1992 Central Valley Protection Improvement Act. In its 2005 update to the implementation plan for the Anadromous Fish Restoration Program (AFRP), FWS estimated the flow volumes that would be necessary to 'double' the natural production of certain Central Valley salmonids.

[12] *"measures in the watershed, sufficient to achieve a doubling of natural production of Chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law."* State Water Resources Control Board, 13 December 2006, Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, (Bay-Delta WQCP). Table 3, pp. 14.

[13] Kimmerer, W. J. 2002. Effects of freshwater flow on abundance of estuarine organisms: Physical effects or trophic linkages? Marine Ecology Progress Series 243:39-55 United States Fish and Wildlife Service, September 27, 2005. http://www.int-res.com/abstracts/meps/v243/p39-55/
Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (FWS 2005), pp. 27. http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_spprtinfo/afrp_2005.pdf

[14] p. 6 NMFS Progress Assessment http://baydeltaconservationplan.com/BDCPPlanningProcess/DocumentsAndDrafts.aspx

been compared to future conditions with and without climate change. The document concludes that the establishment of a North Delta diversion facility would provide substantial resiliency and adaptation benefits over the No Action alternative for dealing with the combined effects of sea level rise due to climate change (p. 29-15).

EPA believes that, depending on how key components of the BDCP are designed and operated, the BDCP *could* provide climate change resiliency and adaptation benefits; however, we are concerned that the ADEIS attributes adverse effects on aquatic resources solely to climate change without adequate consideration of the extent to which the BDCP, as proposed, could exacerbate – or mitigate -- those impacts (e.g., p. Ch 11 SUM-45). Such an approach appears short-sighted and overlooks the fact that the Delta is a highly managed system with a vulnerability to climate change that is, to some degree, a function of its management. In keeping with the co-equal goals of the BDCP, we recommend that the DEIS discuss measures that could be taken to mitigate the impacts of climate change on the aquatic ecosystem (e.g., releasing cold water flows from reservoirs at critical times to protect beneficial uses), in addition to measures to mitigate the impacts of climate change on the water recipients. We look forward to working with the lead agencies and project proponents to identify mitigation strategies that will help buffer the Bay Delta ecosystem from the detrimental effects of climate change and the resulting sea level rise.[15]

VII. Adaptive Management and Mitigation Commitments

The ADEIS concludes that certain impacts would be reduced to insignificance by mitigation, but does not explain the basis for such conclusions (for example, construction impacts and water quality p. 8-473). Assertions are made that adequate mitigation will be ensured by, for example, the CWA §401 certification process. Any finding that a mitigation measure reduces an impact to a level of insignificance should be supported in the DEIS by a detailed discussion of the basis for that conclusion, including a clear explanation of the assumptions underlying the analysis of mitigation measure effectiveness. The analysis should specifically describe the mitigation measure, identify the source(s) of pollutants that are expected to be affected by the measure, clearly explain how and to what extent the measure will affect the source(s), and identify the basis for the estimate (empirical observations, computer modeling, case studies, etc.).

VIII. CWA Section 404

Although there is no statutory requirement that the NEPA document prepared for an HCP under the Endangered Species Act be used as the basis for permits and certifications required under CWA §404 to authorize and implement the project, EPA recognizes the importance of coordination in federal review. Toward this end, EPA and the Corps have met with the project proponent on numerous occasions over the past several years in the interest of using the BDCP EIS/EIR to inform the Corps' 404 regulatory decisions. Despite these efforts, significant unresolved issues remain about the scope of analysis for the proposed project, the level of detail required to trigger the consultation process and federal permitting, and the structure of a comprehensive permitting framework for the proposed project. We are prepared to continue working with the Corps and the project proponent in the months ahead to seek resolution of these issues.

EPA appreciates this early coordination opportunity and we look forward to continued constructive involvement in the development of the BDCP EIS/EIR. Please see our attached comments detailing some

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[15] Climate Change Handbook for Regional Water Planning http://www.water.ca.gov/climatechange/CCHandbook.cfm
Vulnerability Assessments in Support of the Climate Ready Estuaries Program: A Novel Approach Using Expert Judgment, Volume I: Results for the San Francisco Estuary Partnership http://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=241556

additional concerns and recommendations. If you have any questions about our comments, please call Stephanie Skophammer, the lead NEPA reviewer, or Erin Foresman, the Water Division lead, for this project. Stephanie can be reached at (415) 972-3098 and skophammer.stephanie@epa.gov and Erin can be reached at (916) 930- 3722 and foresman.erin@epa.gov.

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[1] See p. 21-22 of EPA's 2012 Action Plan http://www2.epa.gov/sites/production/files/documents/actionplan.pdf
[2] http://baydeltaconservationplan.com/BDCPPlanningProcess/DocumentsAndDrafts.aspx
[3] http://www2.epa.gov/sites/production/files/documents/actionplan.pdf
[4] http://www2.epa.gov/sites/production/files/documents/epa_comments_bdcp_3rdno_051409.pdf
[5] SWAMP- Surface Water Ambient Monitoring Program
http://www.waterboards.ca.gov/water_issues/programs/swamp/rivers_study.shtml
[6] P. 29 Periodic Review of the 2006 Water Quality Control Plan, State Water Resource Control Board
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/periodic_review/docs/periodicreview2009.pdf
[7] State Water Resources Control Board's, 2010 Flows Report, p.2.
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"…current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Executive Summary in 2010 CDFG Flow Criteria.
"a strong majority of scientists prioritizes habitat and flow management actions that would restore more natural processes within and upstream of the delta" (p. 2) http://www.ppic.org/content/pubs/report/R_413EHR.pdf
[8] NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document (04/4/2013), page 15.
[9] U.S. Fish and Wildlife Service Staff BDCP. The broad concern is that the tidal prism would be diminished over time by the large increases in tidal habitat..
[10] Lucas, L. V., and J. K. Thompson. 2012. Changing restoration rules: Exotic bivalves interact with residence time and depth to control phytoplankton productivity. Ecosphere 3(12):117. http://www.esajournals.org/doi/pdf/10.1890/ES12-00251.1. The issue raised is whether the increaseed prodcution of plankton by the restored wetlands would be offset by the increased consumption by exotic bivalves as they spread into the restored wetlands..
[11] 1992 Central Valley Protection Improvement Act. In its 2005 update to the implementation plan for the Anadromous Fish Restoration Program (AFRP), FWS estimated the flow volumes that would be necessary to 'double' the natural production of certain Central Valley salmonids.
[12] *"measures in the watershed, sufficient to achieve a doubling of natural production of Chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law."* State Water Resources Control Board, 13 December 2006, Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, (Bay-Delta WQCP). Table 3, pp. 14.
[13] Kimmerer, W. J. 2002. Effects of freshwater flow on abundance of estuarine organisms: Physical effects or trophic linkages? Marine Ecology Progress Series 243:39-55 United States Fish and Wildlife Service, September 27, 2005. http://www.int-res.com/abstracts/meps/v243/p39-55/
Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (FWS 2005), pp. 27.
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_spprtinfo/afrp_2005.pdf
[14] p. 6 NMFS Progress Assessment http://baydeltaconservationplan.com/BDCPPlanningProcess/DocumentsAndDrafts.aspx
[15] Climate Change Handbook for Regional Water Planning http://www.water.ca.gov/climatechange/CCHandbook.cfm
Vulnerability Assessments in Support of the Climate Ready Estuaries Program: A Novel Approach Using Expert Judgment, Volume I: Results for the San Francisco Estuary Partnership http://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=241556

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BDCP EIR/EIS Review Document Comment Form

Document: ***BDCP EIS Administrative Draft—***

Comment Source: U.S. EPA (contacts: Stephanie Skophammer, Erin Foresman)
Submittal Date: 07-03-13

Comment #	Chapter	Page	Line #	Comment	ICF Response
1	2		General	A more detailed discussion of delta ecosystem health and productivity, water reliability, and the role of water demand would substantially improve support for the Need Section of the Purpose and Need Chapter. This information includes aquatic life population trends and anticipated water demand. Some of this information is documented (e.g. in Ch 5) and readily available and should not be a cumbersome task to include in the Need section.	
2	3	3-3		Section 3.1.1 – is the Preferred Alternative also preferred under NEPA or just CEQA?	
3	3	3-3	16–19	This sentence refers to Alternative 4 of the BDCP. Is it really CM1 Alternative 4 that is being discussed in the sentence or BDCP Alternative 4?	
4	3	3-3	16–19	We recommend adding text to this section that explains the apparent difference in opinion about scientific knowledge regarding the relationship between Delta outflows and restoring ecosystem processes and fish populations and Delta outflows resulting from the preferred alternative operational scenario. The preferred Alternative 4 results in minor changes, -1% to 5%,1 to Delta outflow relative to existing conditions. This suggests that BDCP applicants consider these changes sufficient to meet the ESA Section 10 requirement of "contributing to recovery of endangered and threatened species." There is broad scientific agreement that existing Delta outflow conditions are insufficient for protecting the aquatic	

1 Tables 5-7 and 5-8, Chapter 5 Water Supply Administrative Draft EIS for BDCP.

				ecosystem and multiple fish species, and that both increased freshwater flows and aquatic habitat restoration are needed to restore ecosystem processes in the Bay Delta and protect T & E fish populations.2 This includes statements from lead federal agencies. If there is sound scientific information that supports the perspective that increased Delta outflows are not needed and habitat restoration alone would be able to restore ecosystem processes and protect fish species, it should be presented in this DEIS.	
5	**3**	3-3	16–19	The phrase "...DWR considers to be an optimal balance between ecological and water supply objectives" in reference to Alternative 4 implies that DWR is optimizing a balance between the aquatic ecosystem and water supply and throughout the entire water delivery system. We recommend modifying this sentence to more precisely communicate that a portion of the water supply system is	

2 (a) Public Policy Institute of California (2013) Scientist and Stakeholder Views on the Delta Ecosystem "*a strong majority of scientists prioritizes habitat and flow management actions that would restore more natural processes within and upstream of the delta*" (p. 2). http://www.ppic.org/content/pubs/report/R_413EHR.pdf

(b) State Water Resources Control Board (2010) Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem Flows Report, p.7. "*both flow improvements and habitat restoration are essential to protecting public trust resources [defined as "native and valued resident and migratory species habitats and ecosystem processes"* p. 10].

(c) National Academy of Sciences Natural Resource Council Committee on Sustainable Water Management in California's Bay-Delta (2012) Report: Sustainable Water and Environmental Management in California's Bay-Delta "*...sufficient reductions in outflow due to diversions would tend to reduce the abundance of these organisms ["these organisms" = 8 Bay Delta aquatic species at various trophic levels]*." Page 60 and "*Thus, it appears that if the goal is to sustain an ecosystem that resembles the one that appeared to be functional up to the 1986-93 drought, exports of all types will necessarily need to be limited in dry years, to some fraction of unimpaired flows that remains to be determined.*" Page 105

(d) NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/NMFS_Progress_Assessment_Regarding_the_BDCP_Administrative_Draft_4-11-13.sflb.ashx; and NMFS February 4, 2011 Phase I Scoping Comments "*Inadequate flow to support fish and their habitats is directly and indirectly linked to many stressors in the San Joaquin river basin and is a primary threat to steelhead and salmon.*" available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts020811/010411dpowell.pdf

(e) U.S. Fish and Wildlife Service Staff BDCP Progress Assessment. April 3, 2013 http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/U_S_Fish_and_Wildlife_Service_Staff_BDCP_Progress_Assessment_4-11-13.sflb.ashx; and "*Interior remains concerned that the San Joaquin Basin salmonid populations continue to decline and believes that flow increases are needed to improve salmonid survival and habitat.*" USFWS May 23, 2011 Phase I Scoping Comments, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts052311/amy_aufdemberge.pdf

(f) California Department of Fish and Wildlife (2010) Quantifiable Biological Objectives and Flow Criteria "*...current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish.*" Page 1 in Executive Summary

				being modified to improve reliability and that Alternative 4 is intended to optimize ecological and water supply objectives under a portion of the CVP-SWP delivery system. This would better communicate that adjusting deliveries north of the Delta is not included as a potential method of optimizing ecological and water supply objectives.	
6	**3**	3-11	17-19	The reasons for eliminating these alternatives should be more clearly identified. The document refers to the screening analysis appendix but these decisions should be highlighted in the DEIS.	
7	**3**	3-17	Table 3-2	Are the activities to reduce the effects of methylmercury contamination also focused on minimizing transport of methylmercury? The text here only refers to formation.	
8	**3**	3-20	7	Will near term CMs include acquisition of terrestrial and wetland habitat only or will they include restoration actions too? If so, we recommend including restoration actions in this sentence. It appears that the action is only to acquire the land but not to actively restore it for benefits to fish and wildlife in the near term.	
9	**3**	3-30	6-9	What are the reasons for assuming that regulating the ratio of exports to imports would not apply to the north of delta intakes?	
10	**3**	3-31	28-29	Why is 55% unimpaired flow from **February** to June evaluated instead of a range of unimpaired flows from **January** to June as it is suggested in the State Water Board 2010 Flow Criteria Report? Is this a typographical error or is it really February to June 55% unimpaired flow? If so, why does it not include January?	
11	**3**	3-33	Table 3-6	The comparison among operational elements of the nine CM1 alternatives presented in this table appears to show that the operational elements of the nine alternatives are very similar to one another. This can be seen in Tables 5-5, 5-7, and 5-8 where we see that Delta Outflow varies between -2% to 14% relative to existing conditions. We anticipate high potential for positive and negative CM1 impacts on aquatic communities to be a direct result of the operational elements of the CM1 alternatives. Predicted water quality	

				exceedences for all the alternatives are potentially a product of having very similar operational elements in the alternatives. One way to expand the operational elements would be to determine operational scenarios that mitigate water quality exceedences below the level of water quality standards or other relevant benchmarks.	
12	**3**	3-37	Whole section	Does the No Action Alternative include D-1641 spring flows at Vernalis or VAMP flows?	
13	**3**	3-158	Table 3-13, 3-14, and 3-15.	Information about historical flows should be provided with these tables to provide a frame of reference for understanding the North Delta Intake Bypass Flow Criteria, Post-Pulse criteria, and OMR flow criteria. This could be done using cumulative flow distributions that show how often flows identified in the operational rules are in the Rivers at given locations, during certain times of the year. This information should be available for comparisons for all of the Scenarios.	
14	**3**	3-103	27-39	Are upgrades to the Fremont Weir part of the proposed project (p. 3-103) OR part of the No Action (p. 3D-19)? It seems like they cannot be both.	
15	**3**	3-100	Whole section	How often/how much would the Yolo Bypass be flooded across the different water year types and life of the permit?	
16	3	3-182	Table 3-23	Adaptive management should include operational elements that result in a broader range of freshwater flows through the Delta than are currently identified in H1-H4.	
17	**3**	3-181	General	Has an adaptive management strategy with targets been identified for any of the other alternatives?	
18	**3A**	3A	General	This screening analysis is relevant to a programmatic document and should be in a DEIS chapter directly instead of being placed in an appendix.	
19	**3A**		General	This is the first time EPA has reviewed this screening document. These screening criteria were not evaluated or agreed upon by EPA previously. We were not requested to provide any comments or suggestions prior to this review. These comments represent a first initial review of this document and are not	

				likely to include all comments that emerge from a comprehensive reading of the entire document. In particular, we emphasize that our review and comments should not be read as agreeing that these screening criteria are being used appropriately to identify the alternative most likely to contain the Least Environmentally Damaging Practicable Alternative (LEDPA) at a programmatic level, consistent with the 404(b)(1) Guidelines at 40 CFR Section 230. We would like to meet with the lead and cooperating federal agencies to discuss how these criteria were developed and applied to determine whether or not they are consistent with NEPA and other regulatory requirements for evaluating project alternatives, the 404(b)(1) Guidelines in particular.	
20	**3A**	3A-14	12-33	The Purpose and Need statement in Appendix 3A is different from the statement in ADEIS/EIR Chapter 2 Purpose Statement (Chapter 2, page 2-4 and 2-5). Which version of the purpose statement was used for screening?	
21	**3A**	3A-14	13-38	The text should be clear about whether or not the screening process eliminated alternatives because they did not meet the these elements of the purpose statement in Appendix 3A: "reducing the adverse effects to certain listed species of diverting water by relocating the In takes of the SWP and CVP." This element limits alternatives to only those that build new SWP and CVP pumps in the north Delta. This would eliminate Alternative 9, but that one was carried forward. "up to full contract amounts"	
22	**3A**	3A-17	16-36	Are these bullets the Third Level Screening Criteria? The topic sentence says the bullets below are "considerations reflected in the Third Level Screening Criteria." The Third Level Screening Criteria should be contained in one table with the metrics used to determine whether or not criteria are met.	
23	**3A**	3A-23	8-35	We would like to discuss this screening criterion with the lead federal agencies and	

				discuss their perspective on how it is consistent with NEPA: "Would the potential alternative result in the impairment of existing senior water rights in the Sacramento-San Joaquin Rivers watershed who are not applicants for incidental take authorization through the proposed Bay Delta Conservation Plan?"	
24	**3A**	3A-23	8-35	We are concerned that the above criterion may result in the elimination of alternatives that are less damaging to the aquatic environment, which presents a substantial CWA Section 404 permitting problem because CWA Section 404 permits are restricted to the LEDPA.	
25	**3A**	3A-71	13-38	Unlike the preferred alternative for CM1, which would only minimally change flows through the estuary, this alternative would substantially increase flows through the estuary and provide greater protection for resident fishes. It is important to demonstrate that eliminating this alternative did not eliminate a potentially less environmentally damaging practicable alternative. If such documentation does not already exist, a more complete analysis of this alternative may be required for a CWA permit.	
26	**3A**	3A-84	Table 3A-1	Is there a quantitative definition of "most" that was used in the screening process? Is this greater than 50% of the criteria? Are all criteria considered equal?	
27	**5**	5-4	24	Information about water demand and population growth should be expanded to describe the relationship between water demand and population growth and the reasons it is assumed that demand will grow. Similarly, a discussion about agricultural water use and estimated future changes in the use of SWP/CVP water is also appropriate to describe. This information would also be very useful as support for the Need Statement in Chapter 2.	
28	**5**	5-85	Also table 5-7	North of Delta M&I would increase up to 85% compared to existing conditions. This seems like a very large increase from past trends, and	

				further explanation and support is needed for such an increase. If this is related to population growth, that should be explained here, too (related to table 30-6). And is this 85% increase included in the No Action as well as Alt 4? (p. 5-45).	
29	**5**	5-11	8-15	It may be more straightforward to use the words "shorten the route of Sacramento River Water to the export facilities" instead of "improve the transfer." Readers not familiar with the system will not understand how the transfer is improved by reading that and the word "transfer" can be confused with "water transfers" which are a very different concept than shortening the route of water from the Sac River to the export facilities.	
30	**5**	5-11	8-15	It would also be equitable to explain here that there are some negative impacts to the ability of adult San Joaquin River salmon to successfully navigate back to the San Joaquin River when Sacramento River Water is relocated into the south Delta including San Joaquin River channels.	
31	**7**	7-32	31-41	The topic sentence of this paragraph says that there will be minor changes in water supply availability that are equal to 2% of current groundwater production. Are these changes an increase or a decrease?	
32	**7**	7-81; 7-82	36-39; 1-12	Alternative 4 is compared to Alt 1 and Alt 2A. This is confusing to the reader because impacts should be directly stated and compared to the baseline. (ie No Action and Existing Conditions). H3 is said to represent the impacts of Alternative 4, but an explanation for why this is so is not provided here.	
33	**7**	7-53	Table 7-7	Why is this table not in the water supply chapter?	
34	**7**	7-83	34-36	Does it make sense to use H3 to represent all of Alt 4 just because it represents the original Alt 4? The operational criteria of H1 and H4 are very different, and yet, the impacts are not discussed in the following paragraphs.	
35	**7**	7-86	39-40	Why the comparison to 6A??	
	7	7-46	31-32	What kinds of contaminants can be expected to be discharged with this water? If it's in Ch 8, where is it located there (p.#)?	

36	**7**	7-47	27-28	Is this information unavailable at this time?	
37	**7**	7-50	23	Shouldn't this be described here first and the reference included secondly on the next page?	
38	**7**	7-48	14-17	What is the current status of seepage now at Byron tract forebay? This is not discussed in existing conditions. What kinds of land would potentially be impacted by seepage around the construction of a new intermediate forebay? Would the size of the forebay be smaller for Alt 4 (less intakes)	
39	**7**	7-49	41	These design features should be described in much more detail since they form the basis for the no adverse impact conclusion.	
40	**7**	7-110	37-41	What is the difference between those projects included in the cumulative impacts and those included in the No action alternative? (ie Grassland project is mentioned for the No Action (line 28) and for the cumulative impacts (table 7-8)	
41	**8**	General		Is there a section that explains how the 72 water quality constituents identified in Table SA-11 "WQ constituents for which detailed assessment were performed" (page 8C-40) were narrowed into the 15 WQ metrics evaluated for CM1?	
42	**8**	General		A table that shows how each CM1 alternative meets or exceeds narrative and numeric water quality standards for the water quality constituents that received more detailed analysis should be created. This comparison is important for NEPA disclosure and for permits, authorizations, and certifications that will be needed to build CM1.	
43	**8**	8-53	17-26	This discussion should include text that discloses concerns scientists have with existing selenium criteria not being protective enough of aquatic life (see discussion on page 17 in *US EPA Bay Delta Action Plan* available at http://www2.epa.gov/sites/production/files/documents/actionplan.pdf), and plans to update selenium criteria. A useful example of this information is on pages 32 and 33 of *US EPA Unabridged Advance Notice of Proposed Rulemaking for Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta* available at http://www2.epa.gov/sites/production/files/d	

				ocuments/baydeltaanpr-fr_unabridged.pdf	
44	**8**	8-394	19-43	Further describe the relationship between hydrodynamics and open water aquatic habitat such as year-round anticipated changes to the salinity gradient, quality and quantity of the low salinity zone, continuity of San Joaquin river water from Vernalis to the Delta and migratory corridors for returning adult salmon, and continuity of dissolved oxygen levels along that corridor. Aquatic habitat discussion may be better organized into Chapter 11 but this section on Delta Hydrodynamics is connected and relevant to the relationship between WQ elements and the quality and quantity of open water habitats. It could be much more robust than the information presented, which is focused on meeting WQ objectives due to hydrodynamics changes. If this discussion is not included here, a reference should be provided to such a discussion in Chapter 11.	
45	**8**	8-395	1-10	This section should provide all of the changes to outflow associated with each alternative H1-H4 relative to existing conditions and no action alternative (some of this is in Ch 5 but since it is referenced here it should be discussed). It should also provide the percent change for H1-H4 relative to existing conditions and no action alternative.	
46	**8**	8-395	6-10	The conclusion that the preferred alternative results in increased sea water intrusion in all years in addition to conclusions about EC levels in the southern Delta (see page 8-425 and -426) shows a high potential for substantially negative impacts on the quality and quantity of open water aquatic habitats such as the low salinity zone (0.5-6 ppt salinity), and migratory corridors for salmonids. An analysis of changes to the salinity-gradient and the quality and quantity of open water aquatic habitats is necessary for evaluating impacts to aquatic resources that use specific zones along these gradients as part of their primary habitat for all of part of their life cycle.	
47	**8**	8-397	Table	We recommend making comparisons to the	

			8-67	2009 draft EPA ammonia aquatic life criteria.	
48	**8**	8-407	7-11	The project impacts from bromide to drinking water supplies appears to exceed water quality standards by reducing water quality for the municipal beneficial use below appropriate protection levels.	
49	**8**	8-413	22-26	Making beneficial use impairments measurably worse and exceeding chloride objectives presents significant challenges for concluding that the preferred alternative protects aquatic life and/or the Delta ecosystem. These conclusions also present a significant permitting challenge for CM1. Granting a CWA Section 404 permit is prohibited for projects that violate State Water Quality Standards (40 CFR 230.10(a)(b)(1) "no discharge of dredged or fill material shall be permitted if it causes or contributes, after consideration of disposal site dilution an dispersion, to violations of any applicable State water quality standard").	
50	**8**	8-432	14-17	The topic sentence concluding that there would be no substantial, long-term increase in mercury or methylmercury concentrations or loads in the Delta is inconsistent with the preceding sentence that states that the potential for methylmercury creation in the Delta is adverse and previous statements in this section that the Delta does not have any assimilative capacity for increased loads of methylmercury transported to the Delta or formed within the Delta. The CEQA conclusion also appears to be inconsistent with the general understanding that restoring 20K acres of seasonal wetlands in Yolo Bypass will methylate mercury in the sediments and could become the largest source of methylmercury to the Delta when the bypass is flooded. Further explanation of the reason for this conclusion would be helpful. Or perhaps the topic sentence in the CEQA conclusion paragraph is an error?	
51	**8**	8-723		Please explain why the conclusions about cumulative water quality analyses are different than conclusions about water quality impacts from preferred operations: examples include dissolved	

				oxygen, pesticides, mercury, and selenium.	
52	**8**	8-425 and 426	41-44 and 1-9	Making beneficial use impairments measurably worse and exceeding EC objectives present significant challenges for concluding that the preferred alternative protects agriculture and aquatic life beneficial uses and the Delta ecosystem. These impacts are also significant CWA permitting challenges, see previous comment on chloride and bromide.	
53	**8**	8-426	12-15	We recommend modifying the text to explain why mitigation measures are not available to the applicant. It seems that increasing flows is a mitigation measure that is available to the project applicant. Although doing so may mean that operations change enough to be considered a separate alternative, but the action of increasing flows is possible. This sentence suggests that the action is not something that could be done. It can be done, which makes the negative impact something that can be mitigated. It would be useful to remind the reader of the selection criterion in Chapter 3A which restricts operational elements of the CM1 alternatives to those that do not require changes to water rights other than CVP/SWP contractors. This seems to be the primary reason increased flows are not chosen as a potential source for mitigation.	
54	**8M**	8M-19	Table 5M	The Kd values used (see Table 5M at page 8M-19) are too low; this tends to underestimate bioaccumulation. The values range from 1000 to 1760 for models 1 -8, and then 2840 for Model 9. EPA uses using Kd values of between 3000 and 5900 for EPA delta modeling (the actual range is much larger – approx. 1,300 – 13,000).	
55	8	8-89; 8-90	Tables 8-28, 8-29, para 4	The comparison of the tables underscores how little information we have about water quality in the Delta. This is acknowledged in the narrative. It must be remembered that assumptions are being made with no more than a snapshot of one day's measurements in some cases. These point strongly to the need to act conservatively until current conditions are better understood through more robust monitoring, and the impacts of the project	

				alternative can be predicted with reasonable confidence.	
56	8	8-90	Para 4	The San Joaquin River currently contributes total ~10-15% of the flow to the Delta. The question is how much will that percentage change as a result of the project? Lower Sacramento River flow will increase the impact of higher selenium concentrations from the San Joaquin.	
57	8	8-93	Para 2	The food web preference of bass for insects explains why there was "....no difference in bass selenium concentrations in the Sacramento river at Rio Vista and in the San Joaquin River at Vernalis..." The statement that "...the reasons for this difference are unknown" suggests a lack of understanding of the basic assumptions of the selenium ecological model, i.e., that different food webs biomagnify selenium to greater or lesser extents.	
58	8	8-459	Para 6	The comment is made that nonpoint selenium sources in the San Joaquin Valley will be controlled through a TMDL. While it is true that the flows from the Grassland Bypass Project have reduced selenium inputs to the San Joaquin and, thus, the Delta, they have not yet achieved the TMDL limits. The project has had two extensions thus far, and has a "due date" of 2019. Besides the Grassland Area, the Westlands Area, which has not been able to discharge to the San Joaquin for many years, will receive drainage service by the US Bureau of Reclamation. The outcome is not certain for either of these areas to be able to meet TMDL limits that were set many years ago. Again, great progress has been made in the Grassland Area, but to imply that that the San Joaquin source will not continue to be an issue is rather speculative. The uncertainty around the issue should be acknowledged in the analysis.	
59	8	8-460-462	Impact WQ 26, Mitigation Measure	It is well established that wetlands and other water bodies where flows are impeded by physical and biological barriers increase residence time and thus the likelihood of increasing the biotransformation of selenium sources. Proposing that the wetlands might be the problem implies that non-natural	

			WQ 26	means (reducing access by wildlife, reducing organic matter build up) would be better suited as mitigation measures. This places the emphasis on the effect, rather than the cause. The Delta needs good quality water to support a healthy, non-selenium impacted ecosystem. Discussion of potential source-related solutions, such as delivering more low selenium water from Friant Dam to the San Joaquin River would be more realistic from an environmental perspective than developing wetlands where wildlife would not be welcome.	
60	**8M**	8M-19		The species used are largemouth bass which are not good bioaccumulators and are not particularly sensitive to selenium in their diet. A more sensitive species that bioaccumulates selenium, e.g., salmon or trout (both very toxicologically sensitive to selenium) would be a more appropriate indicator.	
61	**11**	11-1	2	The title of this chapter, Fish and Aquatic Resources, suggests it will include an assessment of impact to aquatic habitat; however, aquatic habitat is evaluated in "Chapter 12 Terrestrial Biology." The quality and quantity of aquatic habitat seems an important element of protecting T & E fish species. Why is the quality and quantity of aquatic habitat evaluated in the Terrestrial Biological Resources Chapter? This is confusing.	
62	**11**	11-1 and 11-2	28-34 and 1-24	This section describes aquatic habitat in the Delta and Suisun with a minor discussion about the salinity gradient and how it defines quality and quantity of aquatic habitat for target fishes. This section and this chapter should include an analysis of impacts to important open water aquatic habitats defined by the salinity gradient, e.g, marine and low salinity zones, and migratory corridors. These habitats should be included in the "Areas of Potential Environmental Effects" and included in the analysis of impacts to aquatic resources. The Low Salinity Zone is minimally described in this section but the quality and quantity of this habitat is not evaluated as primary and migratory habitat for target species.	

				The salinity gradient, as approximated by X2, has an inverse relationship with many bay and estuarine species. For many species, fish populations go down as X2 goes up (salinity intrusion into freshwater increases). Estimating changes to the salinity gradient for each operational scenario is important for understanding how the quantity and quality of estuarine habitats and fish populations change under CM1 operational scenarios A through G. This can be done using one-dimensional equations that calculate X2. Has X2 been calculated, seasonally or year round, for each of the operational scenarios A through G? A more holistic approach is using three-dimensional modeling (more equations) that maps the salinity gradient within the estuary. This makes it possible to estimate the size and location of salinity zones, such as the low salinity zone, under different operational scenarios.	
63	**11**	General		Estimates of relative fish population changes (increases or decreases relative to baseline) or estimates of absolute changes to fish populations are not estimated or disclosed in this section. Were these estimates generated? These evaluations are necessary for informed decision making regarding actions that contribute to recovery of endangered species and/or meet the biological goals and objectives in the HCP.	
64	**11**	General		Freshwater flow may be the best tool available to improve fish population response and protect aquatic life beneficial uses prior to the completion of planned restoration projects. Relative fish population responses to freshwater flow can be estimated using regression equations provided in the peer reviewed literature cited below. We recognize that these equations do not directly include the effects of tidal marsh and floodplain restoration on fish populations; however, we recommend that these tools be acknowledged in the EIS, with a explanation of why they were not used to estimate fish population	

				responses to the proposed actions. Kimmerer, W. J. 2002. Effects of freshwater flow on abundance of estuarine organisms: Physical effects or trophic linkages? Marine Ecology Progress Series 243:39-55 United States Fish and Wildlife Service, September 27, 2005, Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (FWS 2005), pp. 27 available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_spprtinfo/afrp_2005.pdf Scientists will have improved ability to measure effects on fish populations as a function of tidal marsh and floodplain restoration projects after restoration projects are started and measurements and monitoring data become available.	
65	**11**	General		Comparing impacts on fish populations from project alternatives to existing conditions does not reflect the fact that existing conditions are very poor for fish populations and there is general agreement among scientists that native and migratory fish populations need to increase in order achieve self-sustaining population levels. Comparisons of fish population responses to project alternatives should be made to biological goals and objectives so that project alternatives can be distinguished from one another.	
66	**11**	General		Aquatic life benefits from the northern intake bypass flows are not clear and/or appear to be minimal. It appears that there is minimal improvement in fish entrainment and loss from operating a new Delta Conveyance because the times and conditions during which the entrainment effects of the present facilities are of greatest concern will continue to occur after the Delta Conveyance facilities are operating, since use of the northern intakes will be limited to times of higher Sacramento River flows per the North Delta	

				Bypass criteria. At these times, entrainment at south Delta facilities has historically been low. South Delta intake facilities will continue to operate at times when Sacramento River flows are not high enough to operate the Sacramento intakes, which includes the conditions when entrainment effects of the south Delta facilities are greatest for T & E species.	
67	**11**	General		Estimated environmental benefits from dual diversion points (north and south Delta) may be reduced by issues that are not addressed in CM1. The current trash racks, fish screens and diversion facilities in the south Delta are not proposed to be changed. Invasive aquatic weeds and deferred maintenance have greatly impaired the effectiveness of the fish screens for much of the last 20 years. Redirecting diversions to these facilities will expose fish to the threats of salvage operations and ineffective screens. In addition, the impact of an invasion of Dreissenid mussles into the Delta, specifically to the southern Delta, is not addressed in CM1. The invasion of these mussels is very probable and the southern Delta provides suitable habitat for Dreissenid mussels. Impacts from these mussels on freshwater diversions in the Great Lakes and Lake Mead would be informative.	
68	**12**	1	2	Title of the chapter is confusing when compared to the content of the chapter. For example, the majority of natural communities evaluated are aquatic habitat, e.g, "tidal perennial aquatic." The majority of the species evaluated are terrestrial. Potentially renaming it or reorganizing some of the information in this chapter to other chapters would be more appropriate. Chapter 11 is the Fish and Aquatic Resources but it does not evaluate changes to aquatic habitat that are evaluated in the Terrestrial Biological Resources Chapter.	
69	**12**	Part 3 12-21	10	A comprehensive frame of reference for impacts should be provided. Each of the impact assessments states the percent impact of BDCP CMs compared to the amount of each natural community remaining. The example here is, "These modifications represent less than 1% of the 82,266 acres of the community	

				that is mapped in the study area." This gives the impression that BDCP impacts are not very much to this natural community. However, it is not apparent to readers without knowledge of historical aquatic habitat losses, that the majority of Bay Delta natural aquatic communities have been eliminated. The recent Historical Delta Ecology Report provides estimates of pre-development natural communities in the Delta. These estimates should be provided to give the reader a more ecologically appropriate frame of reference in which to understand the estimated impacts from the proposed project. This would make it apparent that project impacts, whether they are a small or large percentage of existing natural community distribution, are in addition to large-scale impacts of actions that occurred in the past.	
70	**12**	Part 3 12-22	1-15	Actions that result in impacts to the aquatic natural communities described in this section and the other aquatic communities are not detailed. The Mapbook does not provide much more detail than the narrative description. Details regarding project impacts should include things such as: estimated impacts to waters of the US (acres and/or linear feet) from project activities that are specifically described (e.g., grading, dredging, trench and fill, boring, spoils piles, levee work, excavation, etc..), volume (yd3) of sediment proposed for disposal sites, volume (yd3) of sediment removal from waters for project impacts and expected maintenance dredging.	
71	**12**	Part 3 12-21		Table 12-4-1 and other aquatic natural community tables, especially 12-4-5 & 12-4-6. Impacts to aquatic communities seem fairly low. Evaluating the mapbooks verifies very few aquatic communities mapped on Bouldin and Bacon Islands. There are Corps of Engineers CWA 404 project-level delineations for these islands for the Delta Wetlands Project that show a much greater amount of aquatic habitat.	
72	**12**	Part 3 12-23	27 & 28	We recommend adding text that explicitly states that other federal regulations under Section 404 of the CWA restrict permits to the alternative that maximizes avoidance and then	

				provides compensatory mitigation.	
73	**12**	P3 12-23	28	Here and other places in the document, aquatic natural community restoration is discussed with respect to eliminating any adverse affects under NEPA, assuming that the restoration is 100% successful. Is there an operating assumption that conservation CMs will be 100% successful? Is there an assumption of a success rate for any of the restoration projects? If so, those assumptions should be disclosed with supporting documentation. If not, a discussion of the success rate among restoration projects for each of the natural community types would be appropriate to provide the reader with context for understanding the potential success of restoration.	
74	**12**	P3	All	Why are CEQA conclusion paragraphs identified and NEPA conclusion paragraphs are not titled?	
75	**12**	P3 12-25	5-9	Is there information that tells us how much more often flows will be in the bypass and these floodplains will be activated? If so, could it be provided here to help the reader understand how often the bypass will be flooded and these benefits will be available for fish?	
76	**12**	P3 12-32	21-23	Table 12-4-3 – Do estimates of impacts here and in the other aquatic habitat natural community tables include impacts from spoils and tunnel muck or other material that is dug up for the tunnel alignment and discharged in adjacent areas that may have wetlands or waters of the US?	
77	**12**	P3 12-38	22-36	Are there quantitative estimates or details that support the conclusion that ongoing operation of new Delta conveyance would have no adverse effect on tidal freshwater emergent wetland natural community? The topic sentence of the paragraph indicates that operations and maintenance could alter acreage of this community by changes in flow patterns. Can this be explained in further detail, including how these changes in flow will not have an adverse affect on the habitat of species that depend on it?	