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Sent: Tuesday, November 24, 2015 12:56 PM

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Subject: URGENT letter to SWRCB re Calif Water Fix and Dec 2, 2015 Closed Session re Hearing Process

Dear State Water Resources Control Board Members, Chief Counsel, and Staff:

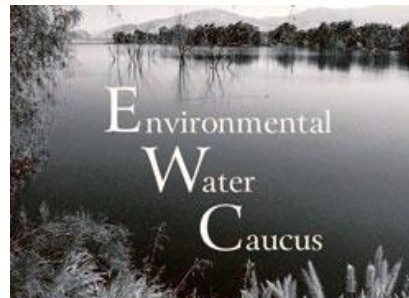
Attached please find our letter of today, November 24, 2015, to you about the California Water Fix Hearing Process, and the Closed Session with the Office of Chief Counsel set for December 2, 2015, to deliberate on procedural decisions to be reached on the joint Petition. The urgency is that we wanted to let you know our position on certain issues before your December 2 closed session.

The legal landscape has recently changed with the EPA having rated the Water Fix RDEIR/SDEIS *inadequate* in its review letter of October 30, 2015. Our attached letter focuses on that and also on the change from the BDCP which was a habitat conservation plan into the Water Fix. We also attach for you a copy of the EPA letter that our letter discusses.

You are welcome to call me with any questions you may have. (This email & the two attached letters are cc'd to the designated recipients at DWR and the Bureau of Reclamation for Hearing Process communications).

Sincerely,

Bob Wright
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November 24, 2015

State Water Resources Control Board Members, Chief Counsel and Staff
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Via Email

Re: URGENT, California Water Fix Hearing Process and Closed Session with Office of Chief Counsel on December 2, 2015

Dear State Water Resources Control Board Members, Chief Counsel and Staff:

Introduction

Our public interest organizations¹ expect to participate in the State Water Board process pertaining to the Petition for Change in Points of Diversion and Re-Diversion along the lower Sacramento River as part of the California Water Fix Water Tunnels project (Change Petition). Some of our organizations have already submitted letters to the State Water Board pertaining to the Change Petition.

The significance of this Petition goes beyond its official subjects. It addresses "related State Water Board Activities" which include the Tunnels Change Petition's 401 certification

¹ Friends of the River is a nonprofit public interest organization devoted to the protection and restoration of California rivers. Restore the Delta campaigns so that all Californians recognize the Sacramento-San Joaquin Bay Delta as part of California's natural heritage, to make Delta waters fishable, swimmable, drinkable, and farmable, able to support the health of the estuary, San Francisco Bay, and the ocean beyond. California Sportfishing Protection Alliance's purpose is conserving, restoring, and enhancing the state's water quality, wildlife and fishery resources and their aquatic ecosystems and associated riparian habitats. The Environmental Water Caucus (EWC) is a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes.

application to the State Water Board, the Bay Delta Water Quality Control Plan and Implementation process, and the Delta Reform Act's requirement that the State Water Board address Delta Flow Criteria.² Our letter addresses not only Change Petition issues, but issues raised by its relationship to these other processes and State Water Board obligations.

Now, the State Water Board has issued notice of a Closed Session with the Office of Chief Counsel for Wednesday, December 2, 2015. The pertinent item is described as:

The Board will meet in closed session to deliberate on procedural decisions to be reached in the proceeding to consider the joint Petition filed by the California Department of Water Resources and the U.S. Bureau of Reclamation to add three new points of diversion and/or points of rediversion of water to specified water right permits for the State Water Project and the Central Valley Project associated with the California WaterFix Project. This closed session is authorized under Government Code section 11126, subdivision (c)(3). (Posted Notice).

The purpose of this letter is to communicate our position on new developments affecting the procedural decisions to be reached in the preceding to consider the joint Petition, and do so prior to the Closed Session of December 2, 2015.

It is our understanding that the October 30th Notice represents a staff proposal for handling the Change Petition. It necessarily must address in some fashion the relationship of this important Petition in relation to other State Water Board obligations. We understand this matter will be discussed in closed session between Board staff, Board Counsel, and Board members. We provide you this letter in hopes of helping to clarify issues that the staff's above-referenced Notice raises.

The Tunnels Project Change Petition is the most damaging and controversial diversion and rediversion proposal in California history. It is the most expensive water project proposal in California history. The 1970's version of the Water Tunnels, then known as the peripheral canal, was voted down in a statewide referendum in June 1982 by a 2 to 1 margin.

The Tunnels Project would take enormous quantities of water from the Sacramento River upstream along the lower Sacramento River between Clarksburg and Courtland. Its construction would last 14 years, fomenting a permanent construction period on Delta residents, businesses, and farmers that for most small businesses dependent on moving goods and crops through and around the Delta would be a traffic and goods-movement death-knell. As a result of its massive diversions, the freshwater that presently flows through designated critical habitats for now-crashing fish populations in the Sacramento River and sloughs to and through the Bay-Delta before being diverted for export at the south Delta, would no longer even reach the Delta. The loss of these flows would dramatically deplete the freshwater flows badly needed for vulnerable listed species, fisheries, local drinking water supplies and marinas. The benefits of those

² State Water Resources Control Board, *Notice of Petition Requesting Changes in Water Rights of the Department of Water Resources and U.S. Bureau of Reclamation for the California WaterFix Project and Notice of Public Hearing and Pre-Hearing Conference to Consider the Above Petition*, issued October 30, 2015, pp. 6-8. Cited hereafter as "October 30th Notice."

freshwater flows for Delta water flows and water quality, fish, and fish habitat would be lost. The question is not whether the new upstream diversion would be bad for Delta freshwater flows, water quality, and endangered and threatened species of fish and their designated critical habitats. The question instead is how bad will it be.

The State Water Resources Control Board has delayed revision of the 1995 Bay-Delta Water Quality Control Plan, managing only a light revision of it in 2006, and a staff-update about it in 2009. The bifurcated review process the Board chose to proceed with in 2009 has contributed to delay when in 2013, the Board issued its Phase 1 Substitute Environmental Document reviewing its proposed revisions to San Joaquin River flow and South Delta salinity objectives, a proposal that was met with resounding criticism, sending the Board back to improve the proposal's modeling and its environmental documentation. It is our understanding that Phase 1 is not due out until "early 2016" at the earliest, according to the State Water Board's web site. A Phase 2 staff "Draft Scientific Basis Report" and range of alternatives for review in this phase's Draft SED for review of the rest of the Bay-Delta plan's scope (including Delta outflow, Sacramento River inflow and other north and western Delta and Suisun Marsh water quality objectives) is not due out until Spring 2016 and a Draft SED is not expected until over a year later.³

Having raised Endangered Species Act (ESA) issues, we appreciate that the State Water Board has determined that the second part of the hearing focusing on the potential effects of the Petition on fish and wildlife and recreational uses, "is not planned to commence until after the environmental and endangered species act compliance processes are completed."

To further complicate matters, the subject Notice proposes that the Board process the Phase 2 portion of the Bay Delta Water Quality Control Plan and California WaterFix Change Petition concurrently. We think this is an error and will lead to egregious confusion, poor policy making and inadequately protective permit terms concerning the operation of the Tunnel Project's North Delta intakes and the Head of Old River operable gate. More to the point, we think it will prejudice the setting of water quality objectives and beneficial uses in the Delta by privileging a Change Petition for which the current Water Quality Control Plan does not even recognize as a Delta beneficial (or designated) use under the Porter Cologne Water Quality Control Act and the federal Clean Water Act (CWA). A Change Petition of the scale and consequence of the subject Notice must take a back seat to the completion of the Bay Delta Water Quality Control Plan so that a clear framework based on a transparent public process for completing the Board's new plan is unhindered. In short, Delta water quality policy should come before plumbing decisions.

We do want to alert you that several recent developments require modifications to the State Water Board hearing schedule. First, an *adequate* Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) must be prepared *before* commencing any part of the evidentiary hearing. Second, Phase 2 of the Bay-Delta Plan update must also be completed *before* commencing any part of the evidentiary hearing.

³ http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/

An Adequate Draft EIR/EIS must be Prepared Because the Water Fix SDEIS is Inadequate and the EPA Has Determined it to be Inadequate

An *adequate* Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) must be prepared *before* commencing any part of the evidentiary hearing. Such an adequate Draft EIR/EIS does not yet exist. Our organizations submitted comments on the numerous inadequacies of the recirculated Draft EIR/EIS. We have urged on various issues that the project should be withdrawn.

The State Water Board commented on the Water Fix Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS) in its comment letter of October 30, 2015. The Board stated:

The State Water Board has received and is currently processing the water right change petition and the water quality certification for the Cal WaterFix, the current preferred project. *The RDEIR/EIS and Final EIR/EIS will inform these processes.* (Board Letter, p. 1) (emphasis added).

In fact, the RDEIR/SDEIS will *not* inform these processes. On that same date of October 30, 2015, the U.S. Environmental Protection Agency (EPA) issued its letter reviewing the Water Fix SDEIS as required by Section 309 of the Clean Air Act. The EPA has, in that letter, given the SDEIS a rating of “‘3’ (*Inadequate*)”. (EPA Letter, October 30, 2015, p. 4).⁴ That is EPA’s failing grade. EPA’s *Policy and Procedures for the Review of Federal Actions Impacting the Environment* (10/3/84) explains what that means in section 4(b) of that document entitled “Adequacy of the Impact statement”:

(3) ‘3’ (*Inadequate*). The draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA’s belief that the draft EIS does not meet the purposes of NEPA[National Environmental Policy Act] and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. (p. 4-6).

The EPA says they expect the missing information will be “supplied as later regulatory processes proceed.” (EPA Letter, p. 4). “[P]ending actions by the State Water Resources Control Board” is one of the future processes that the EPA expects “will supply the missing pieces necessary to determine the environmental impacts of the entire project.” (*Id.*). The EPA findings about missing information are consistent with the State Water Board’s October 30, 2015 comment letter including; “there is a large degree of uncertainty regarding the exact effects of the project due to a number of factors.” (Board Letter, p. 2).

⁴ A copy of the October 30, 2015 EPA letter is attached.

The EPA concluded that deferral of water flow management decisions means “that any attempt to describe the environmental impacts of the project is necessarily incomplete.” (EPA Letter, p. 2). The EPA also found that the information in the SDEIS:

predicts a loss of valuable aquatic habitat for many fish species in the Delta and upstream tributaries due to the combined effects of the Water Fix project, CVP/SWP exports, climate change, and increased water diversions upstream of the Delta in the Sacramento River Basin. These species have experienced sharp population declines in the last decade and showed record low abundance over the last five years. (EPA Letter, p. 3).

The EPA is not the only agency concerned about loss of valuable aquatic habitat. The California Department of Fish and Wildlife noted many adverse impacts of reduced flows from Water Fix operation on fish species in its RDEIR/SDEIS comments of October 29, 2015, and Supplemental Document of October 30, 2015.⁵

Moreover, the EPA explained that “the Water Fix project does not propose additional flows in the Delta, nor does it propose significant habitat restoration (See EcoRestore above).” (EPA Letter, p.3). And, “Water quality and aquatic life analyses in the SDEIS show that the proposed project may cause or contribute to violations of state water quality standards and significant degradation of waters of the U.S. . . .” (EPA Letter, p. 4).

Thus, beyond our own findings of inadequate documentation, the EPA has also found the RDEIR/SDEIS inadequate.⁶ In addition, the October 30, 2015 EPA letter does not say that the EPA’s prior concerns have been addressed. So, all of those concerns still apply.⁷ Critical omissions include the failure to develop the required reasonable range of alternatives. As just one example, “CVP/SWP [Central Valley Project/State Water Project] operations scenarios that propose additional outflow, such as BDCP Alternatives 7 and 8 from the DEIS, could provide substantially more water for resident and migratory fish and provide benefits to aquatic life; however, these were not evaluated as alternatives in the SDEIS.” (EPA Letter, p. 3). Because of the failure to complete the ESA required consultations, the reasonable and prudent alternatives required under the ESA have not been identified, let alone adopted. “When a biological opinion concludes that the action is likely to jeopardize an endangered or threatened species, or adversely modify its habitat, then the consulting agency must suggest ‘reasonable and prudent alternatives [RPA].’ *Id.*” *Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1085 (9th Cir. 2015).

There has also been complete failure to identify, let alone adopt, the Least Environmentally Damaging Practicable Alternative (LEDPA) required by Clean Water Act (CWA) § 404(b)(1). “A proposed action is not the LEDPA simply because a federal agency is a

⁵ A copy of the CDFW Letter is furnished separately today to the Board’s Chief Counsel to keep from sending a number of attachments to all Board Members and Staff.

⁶ There are many reasons why the RDEIR/SDEIS is inadequate. To keep this initial alert short, at this time we simply reference the EPA Letter.

⁷ A copy of the August 26, 2014 EPA letter setting forth those many prior concerns is furnished separately today to the Board’s Chief Counsel.

partner and chooses that proposed action as its preferred alternative.” (EPA Letter, August 27, 2014, Corrections and Additional Editorial Recommendations, p. 1). Finally, the State Water Board in its RDEIR/SDEIS comment letter of October 30, 2015, reminded that its prior request for a scenario that would increase Delta outflows without impacting cold water pools be evaluated was not developed into an alternative. (Board Letter, p. 2).

The result is that, in addition to there not being an adequate informational basis at this time for any portion of the evidentiary hearing yet to commence, there has been a complete failure to present for public and decision-maker evaluation the required reasonable range of alternatives. The absence of reasonable and prudent alternatives under the ESA and Least Environmentally Damaging Practicable Alternative under the CWA graphically demonstrate that the Change Petition is not ready for commencement of any part of the evidentiary hearing.

In addition, unless and until an adequate Draft EIS/EIR is prepared there is no basis whatsoever for processing or issuing a water quality certification for the Water Fix project. The Staff proposal to process the application for water quality certification pursuant to §401 of the Clean Water Act (CWA) (Notice of Petition, p. 6), like the Petition itself, must await preparation and circulation of an adequate Draft EIR/EIS.

The California Environmental Quality Act (CEQA) Guidelines require that:

‘Significant new information’ *requiring recirculation* include, for example, a disclosure showing that:

- (1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
- (2) . . .
- (3) A *feasible project alternative* or mitigation measure considerably different from others previously analyzed *would clearly lessen the significant environmental impacts* of the project, *but the project’s proponents decline to adopt it*.
- (4) The draft EIR was *so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded*. 14 Code Cal. Regs § 15088.5(a)(1), (3), and (4)(emphasis added).⁸

Again, the RDEIR/SDEIS is inadequate. Under CEQA, unless the change Petition is dropped, a new Draft EIR/EIS sufficient to provide for meaningful public review and comment must be prepared and circulated to provide an adequate informational basis and a range of reasonable alternatives for the evidentiary hearing.

⁸ The NEPA Regulations require that: "The draft statement must fulfill and satisfy to the fullest extent possible the requirements established for final statements in section 102(2)(C) of the Act. If a draft statement is *so inadequate as to preclude meaningful analysis*, the agency shall prepare and circulate a revised draft of the appropriate portion. The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action." 40 C.F.R. § 1502.9(a), emphasis added. As is the case under CEQA, under NEPA, unless the change Petition is dropped, a new Draft EIR/EIS sufficient to provide an adequate basis for the evidentiary hearing must be prepared and circulated.

This foundational deficiency is not something that can be fixed by an adequate Final EIR/EIS. The development and circulation for public review and comment of an *adequate Draft* EIR/EIS is indispensable to meaningful public review of environmental impacts and informed evaluation of a range of reasonable alternatives *before*, rather than *after*, a government decision adopting an alternative is made.

In addition, there has been a total failure to date by DWR and Reclamation to demonstrate affirmatively that the State has taken the public trust into account during the course of designating the Water Fix to be the “preferred alternative.” The State *must* conduct a public trust analysis. *E.g.*, *San Francisco Baykeeper, Inc. v. California State Lands Commission*, __Cal.Rptr.3d__, 2015 WL 7271956 (4th Dist. Ct. App., No. A142449, November 18, 2015). Beyond the general applicability of the public trust doctrine to applications to take significant water flows away from the Delta, there is also the specific requirement in the Delta Reform Act that the “principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta.”⁹

The fact that more time and more work are necessary before the Water Fix can be lawfully reviewed is not the fault of the law, the EPA, the State Water Board, or Water Tunnels opponents. Reclamation delayed nine years before commencing the ESA consultation process. Reclamation and DWR could have prepared an adequate Draft EIR/EIS. Reclamation and DWR could have developed a reasonable range of alternatives to increase Delta flows by reducing exports that might have served as the basis for a habitat conservation and national community conservation plan. Reclamation could have obtained reasonable and prudent alternatives (RPA) pursuant to the ESA and could have developed the Least Environmentally Damaging Practicable Alternative (LEDPA) pursuant to the CWA. Reclamation and DWR have failed to do what the law requires.

Unless Reclamation and DWR prepare an adequate Draft EIR/EIS, the State Water Board will have to do that prior to commencing Part 1 of the hearing. Part 1 is focused on “the potential effects of the Petition on agricultural, municipal and industrial users of water and conditions that should be placed on the approval of the Petition to protect those users.” (State Water Board combined notice). Part 1 of the hearing is presently scheduled to commence April 7, 2016. That will need to be changed to allow the time necessary to prepare an adequate Draft EIR/EIS. This is because legal users, like other citizens, need an *adequate Draft* EIR/EIS on the Change Petition for the hearing to be conducted using as complete and accurate an evidentiary record as possible with proper due diligence by all parties involved. Presently, the RDEIR/SDEIS cannot accurately disclose water supply, water flow or water quality degradation issues that are essential to Change Petition review of the potential for injury to other legal users of water. Moreover, the present RDEIR/SDEIS fails to acknowledge in its baseline that unimpaired flows in the Central Valley watershed of the Bay Delta Estuary are over appropriated by water rights claimants in average years by over fivefold. Likewise, any consideration of a water quality certification under §401 of the CWA also requires preparation of an adequate Draft EIR/EIS.

⁹ Water Code § 85023.

The Water Fix has no Force of Law Behind it

There is no rational reason for the State Water Board to begin an evidentiary hearing on the Water Fix at this time. The Water Fix is not a federally authorized project. Congress has not enacted legislation authorizing development and construction of the Water Tunnels. And, because of a recent change to the BDCP/Water Fix the Water Fix no longer has any recognition in State law.

As explained by the EPA, “In April 2015, Reclamation and DWR announced fundamental changes to the proposed project and changed its name from BDCP to the California Water Fix . . . The proposed federal action has changed from implementing a Habitat Conservation Plan under Section 10 of the ESA to modifying operations of the federal Central Valley Project (CVP) in order to accommodate new water conveyance infrastructure.” (EPA Letter, pp. 1-2).

This was no mere name change. Until about April 2015, the claim being made in BDCP documents had been that while there would be adverse impacts from Water Tunnels operations, some of that would be mitigated by the provision of wetland restoration. As just one example of dropping conservation features to protect the Delta, the “65,000 acres of tidal wetland restoration” has been chopped down to “59 acres.” (RDEIR)/SDEIS) p. ES-17).

The Delta Plan, developed by the Delta Stewardship Council, is, under the Delta Reform Act, to be “the comprehensive, long-term management plan for the Delta . . .” Water Code § 85059. If the BDCP had been kept going and been approved as a habitat conservation plan under the ESA and approved as a national community conservation plan under the CESA, its incorporation by the Delta Stewardship Council into the Delta Plan would have been mandatory under § 85320(e) of the Delta Reform Act if certain conditions were met. But because Reclamation and DWR dropped the habitat conservation plan and national community conservation plan, incorporation of the Water Fix into the Delta Plan is not mandatory. Moreover, the Water Fix has no recognition whatsoever under the Delta Reform Act. The Act definition is: “‘Bay Delta Conservation Plan’ or ‘BDCP’ means a multi-species conservation plan.” Water Code § 85053. The Water Fix is not a multi-species conservation plan. The Water Fix, no longer being a habitat conservation or national community conservation plan, has no force of State law behind it.

The Water Fix, involving construction of massive new conveyance facilities to take water away from the Delta before it even reaches the Delta is contrary to State policy as declared by the Legislature. “The policy of the State of California is to *reduce reliance on the Delta* in meeting California’s future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency.” Water Code § 85021. (emphasis added). Also, the Delta is to be restored, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem. Water Code § 85020(c).¹⁰

¹⁰ In addition, the Water Fix is not even eligible for state funding because it fails to meet the requirements of § 85320(b) of the Delta Reform Act. Because of the absence of an adequate Draft EIR/EIS, there has not been the compliance with CEQA required by § 85320(b)(2). Nor has there been the comprehensive review and analysis of: a reasonable range of “flows necessary for recovering the Delta ecosystem and restoring fisheries . . . which will

Again, all of what is required by the Delta Reform Act is lacking. The Draft environmental documents prepared for the Water Fix have been determined to be *inadequate* by the EPA. Beyond that, since the Water Fix is not a habitat conservation or national community conservation plan, its incorporation into the governing Delta Plan is not mandatory so that the Water Fix has no force of law behind it.

The order of Proceeding puts the cart before the horse by proposing to review the subject Petition and Phase 2 of the Bay-Delta Plan Update concurrently rather than completing the Plan Update first

The State Water Board still proposes to review the Petition while conducting Phase 2 of the Bay-Delta Plan update concurrently, rather than awaiting completion of Phase 2 of the Plan update. (Notice of Petition, p. 7). The Board states:

The decision on the application for water quality certification will not be based on future changes to water quality requirements that may result from the update to the Bay-Delta plan, but rather it must ensure that existing water quality requirements will be met. Similarly, the State Water Board is not required to know exactly what changes to flow and water quality objectives will result from the update of the Bay-Delta Plan in order to process the change petition. (State Water Board Fact Sheet, p. 4).

From a planning standpoint, we disagree that this is a wise approach to either policy planning or Change Petition evaluation and permitting. The Staff Notice fails to disclose *how* it intends to process both at the same time and fails to justify in law this claim and explain why it would be a good idea to run the processes concurrently. What is the Board's authority for not having to know exactly what changes to flow and water quality objectives are needed for the Change Petition? In our view, the presumed virtues of the 1995 Water Quality Control Plan and its implementation vehicle, Water Rights Decision D-1641, are in tatters with the Board's recent treatment of its objectives during the 2014 and 2015 temporary urgency change petitions filed by the state and federal water project operators. Further confirmation of the inadequacy of existing water quality policy is that under this Plan and D-1641, Delta smelt and winter-run Chinook salmon are closer than ever to extinction, and other listed and candidate species (such as longfin smelt) are not far behind if present trends continue.

As set forth above, it is necessary to prepare an adequate Draft EIR/EIS before reviewing the Petition. In addition, the EPA pointed out in its October 30, 2015 RDEIR/SDEIS review letter that:

The Delta is listed as impaired for several water quality parameters under Section 303(d) of the CWA [Clean Water Act]. EPA is working closely with the State Water Board to

identify the remaining water available for export and other beneficial uses” required by § 85320(b)(2)(A); “A reasonable range of Delta conveyance alternatives, including through-Delta . . .” required by § 85320(b)(2)(B); “The potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities . . .” required by § 85320(b)(2)(C); “the potential effects on migratory fish and aquatic resources” required by § 85320(b)(2)(D); or “The potential effects of each Delta conveyance alternative on Delta water quality.” § 85320(b)(2)(G).

ensure that the revised standards are sufficient to address impaired water quality conditions in the Delta and reverse the declines in the fish species. (EPA Letter, p.4).

The EPA also pointed out that the new water intake and conveyance infrastructure would require authorization under CWA § 404. “Water quality and aquatic life analyses in the SDEIS show that the proposed project may cause or contribute to violations of state water quality standards and significant degradation of waters of the U.S. . . .” (EPA Letter, p. 4). Moreover,

the most essential decision for achieving the desired balance between water reliability and restoration of the Bay Delta ecosystem is how freshwater flows through the Delta will be managed. This key decision is not described in the SDEIS and is, instead, deferred to future regulatory processes administered by the State of California in consultation with federal resource and regulatory agencies. The decision by the State of California and Reclamation to defer these decisions means that the impacts of the Water Fix project on the Delta ecosystem cannot be fully evaluated at this time, and that any attempt to describe the environmental impacts of the project is necessarily incomplete. (EPA Letter, p. 2).

The EPA letter established that the Delta is already in violation of water quality standards, and that the proposed Water Fix would contribute to worsening the violations.¹¹ It is also established that the impacts of the Water Fix on the Delta lack an adequate informational basis for analysis. The State Water Board indicates it will not be governed by the report it developed in 2010 as required by the Delta Reform Act, Water Code § 85000 et seq., developing flow criteria for the Delta. The State Water Board distances itself from its own report calling it “narrowly focused on the flows needed in the Delta ecosystem if fishery protection was the sole purpose for which its waters were put to beneficial use . . .” (Notice of Petition, p. 8). Regardless of whether fishery protection is normally the sole purpose, the undisputed facts are that the Sacramento River Winter-Run Chinook Salmon is listed as an endangered species under the ESA, 16 U.S.C. § 1531 *et seq.* Likewise, the Central Valley Spring-Run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Delta Smelt, are listed as threatened species under the ESA. The reaches of the Sacramento River, sloughs, and the Delta that would lose significant quantities of freshwater flows through operation of the Water Tunnels are designated critical habitats for each of these five listed and endangered fish species. “ESA section 7 prohibits a federal agency from taking any action that is ‘likely to jeopardize the continued existence’ of any listed or threatened species or ‘result in the destruction or adverse modification’ of those species’ critical habitat.” *San Luis & Delta-Mendota Water Auth. v. Locke*, 776 F.3d 971, 987 (9th Cir. 2015). So whatever might be the situation under other circumstances, the presence here of listed fish species and designated critical habitat does, under the ESA, elevate fishery protection to the top of the list.

At the same time as the State Water Board distances itself from its own 2010 report, the Board plans to commence review of the Petition, without having updated the Plan. *This is putting the cart before the horse.* It is necessary in any type of rational planning process for water quality policy in Phase 2 to be completed before a large-scale adjustment to flows and water quality is

¹¹ See also the Environmental Water Caucus comment letter in this regard, pp. 51-95, accessible at <http://ewccalifornia.org/reports/comments-rdeir-dseis-10-30-2015.pdf>.

introduced to the estuary for consideration in light of newly adopted policies. Analogously this is done all the time in local planning and development project permitting. Phase 2 “involves other changes to the Bay-Delta Plan to protect beneficial uses not addressed in Phase 1, including Delta outflows, Sacramento River flows, export restrictions, DCC gate closure requirements and potential new reverse flow limits for Old and Middle Rivers.” (Notice of Petition, p. 7). The State Water Board appears to be attempting to act untethered from governing law. The August 2010 flow criteria that the State Water Board now seeks to distance itself from has the force of law behind it, having been required by Water Code § 85086(c)(1). The Plan update is imperative because the Delta is in crisis violating water quality standards, and the existing standards need to be strengthened to protect Delta water quality.

We note as well that the "appropriate Delta flow criteria" that the Delta Reform Act requires it develops specifically for "a change in point of diversion of the State Water Project...from the southern Delta to a point on the Sacramento River" is *in addition to* its consideration of the Delta Flow Criteria report findings the Board approved in August 2010.¹²

The Plan update is necessary to determine whether the Water Fix would even be a lawful, let alone a reasonable, alternative.

The State Water Board must comply with law including the ESA, CEQA, NEPA, the CWA, the Delta Reform Act and the public trust doctrine. But even if that was not the case, there would be no rational reason to put the cart before the horse by conducting an evidentiary hearing without having an adequate Draft EIR/EIS and without having completed the Bay-Delta Plan update.

We presume that the State Water Board wishes to act lawfully. We presume that the State Water Board does not intend to prejudge the issues and hold an evidentiary hearing on the Petition in the absence of the adequate informational basis and reasonable range of alternatives that would be provided by an adequate Draft EIR/EIS and an updated Bay-Delta Plan. We presume that the State Water Board is not attempting to prejudge the issues by approving the Petition and then crafting the Bay-Delta Plan update to “fit the fix.”

Again, the fact that more time and more work are necessary before the Petition can be ready for evidentiary hearing is not the fault of the law, the EPA, the State Water Board, or Water Tunnels opponents.

Reclamation and DWR have failed to do what the law requires. The State Water Board now has the opportunity to comply with the law and rational planning by preparing or requiring the preparation of an adequate Draft EIR/EIS and by finishing the Bay-Delta Plan update prior to

¹² The specific "appropriate Delta flow criteria" language is from Water Code Section 85086(c)(2). While Water Code Section 85086(c)(1) states that the flow criteria the board develops under that provision of the Water Code "shall not be predecisional with regard to any subsequent board consideration of a permit, including any permit in connection with a final BDCP," this same section does not limit its informational value from informing the Phase 1 and Phase 2 components of water quality control planning for the Bay-Delta Estuary. These flow criteria have the added virtue of having been developed in reliance on best available science, in compliance with Delta Reform Act policies. It is also unclear what the Water Code means by "predecisional." The notice seems to conflate these two sets of flow criteria.

commencing any portion of the evidentiary hearing. At present, there is no adequate foundation in place for an evidentiary hearing on the Petition.

Conclusion

Extinction is forever. There is no adequate informational basis at this time on which to commence an evidentiary hearing. No adequate Draft EIR/EIS has been prepared and circulated for public review and comment. The State Water Board distances itself from its own Delta flow criteria developed in 2010 but seeks to commence evidentiary hearing on the Petition before completing its Bay-Delta Plan update. The Water Fix has no force of either federal or State law behind it. There is no legitimate planning reason to proceed in a rush to approve the Petition and then update the Bay-Delta Plan to fit the fix. Finally, there is no lawful basis to proceed with a project that will worsen already existing water quality violations in the Delta or consider a water quality certification in the absence of an adequate Draft EIR/EIS and in the absence of public trust analysis.

If you have any questions, please contact Robert Wright, Senior Counsel, Friends of the River, at (916) 442-3155 ext. 207 or bwright@friendsoftheriver.org .

Sincerely,

/s/E. Robert Wright
Senior Counsel
Friends of the River

/s/Barbara Barrigan-Parrilla
Executive Director
Restore the Delta

/s/Bill Jennings
Executive Director
California Sportfishing Protection Alliance

/s/Conner Everts
Co-Facilitator
Environmental Water Caucus

Attachment

cc (Addressees: via Email):

Felicia Marcus, Chair, State Water Resources Control Board (SWRCB)
Frances Spivy-Weber, Vice-Chair SWRCB
Doreen D'Adamo, member, SWRCB
Tam M. Doduc, member, SWRCB
Stephen Moore, member, SWRCB
Tom Howard, Executive Director, SWRCB
Michael Lauffer, Chief Counsel, SWRCB
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Jared Blumenfeld, EPA, Region IX



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

**75 Hawthorne Street
San Francisco, CA 94105-3901**

OCT 30 2015

**OFFICE OF THE
REGIONAL ADMINISTRATOR**

David Murillo, Regional Director
Bureau of Reclamation, Mid-Pacific Region
2800 Cottage Way, MP-700
Sacramento, CA 95825

Subject: Supplemental Draft Environmental Impact Statement
Bay Delta Conservation Plan/California WaterFix CEQ# 20150196

Dear Mr. Murillo:

The U.S. Environmental Protection Agency has reviewed the Bay Delta Conservation Plan (BDCP)/California WaterFix Supplemental Draft EIS pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review responsibilities under Section 309 of the Clean Air Act. The San Francisco Bay/Sacramento-San Joaquin Delta is an important estuarine system, supporting over 750 species and supplying drinking water to 25 million people and irrigation water to 4 million acres of farmland.

Background

The WaterFix project evolved from the BDCP, which was proposed as a Habitat Conservation Plan (HCP) to support the issuance of a 50-year incidental take permit under Section 10 of the Endangered Species Act (ESA). A joint federal and state Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) for the BDCP was released on December 13, 2013, with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and Bureau of Reclamation (Reclamation) as joint federal lead agencies for the DEIS, and the California Department of Water Resources (DWR) as the State lead agency for the DEIR. The BDCP included a major habitat restoration program, targeting over 150,000 acres, as well as a proposed new conveyance facility (tunnels) to transport water from the Sacramento River to existing pumps in the South Delta.

In August 2014, the federal and State lead agencies committed to supplement/recirculate the DEIS/DEIR in response to public comments received on that document, including those submitted by EPA on August 26, 2014. In a collaborative effort to resolve the issues that we had raised, EPA met frequently with DWR and the original federal lead agencies for several months after submitting our comments on the DEIS, and we appreciate the attention given to the analysis of the proposed project's impacts on specific water quality parameters.

In April 2015, Reclamation and DWR announced fundamental changes to the proposed project and changed its name from BDCP to the California WaterFix. The WaterFix project focuses on the construction and operation of proposed new water export intakes on the Sacramento River to divert water into a proposed 40 mile twin tunnel conveyance facility. Reclamation is now the sole lead federal agency. The proposed federal action has changed from implementing a Habitat Conservation Plan under

Section 10 of the ESA to modifying operations of the federal Central Valley Project (CVP) in order to accommodate new water conveyance infrastructure.

Project Benefits

The proposed project and alternatives would provide greater water supply reliability for the users of exported Delta water and would reduce certain adverse impacts of the CVP and State Water Project (SWP) on fish. The SDEIS shows that transporting water in tunnels would reduce the risks to CVP/SWP exports in several ways. The proposed tunnel project would provide greater protection against sudden degradation of exported freshwater caused by the catastrophic failure of the earthen levees in the Delta and the consequent intrusion of saltwater that could foul supplies of water for municipal, agricultural and industrial consumption. Given the potential for earthquakes and floods in the region and the numerous earthen levees encircling the Delta islands, water supply security is a significant concern. Transporting water via tunnels would substantially address longer term threats to export water quality caused by sea level rise, with its concomitant salt water intrusion. The proposed project would also enhance CVP/SWP project flexibility by adding a northern diversion point. The current system, which relies solely on the southerly intakes, provides limited operational flexibility and at times results in reverse flows in Old and Middle Rivers which are associated with decreased survival of endangered fishes. Added flexibility would enable better real-time management of the export operations in response to observed movement of special status fish populations. Furthermore, the SDEIS predicts that flexible use of the proposed new intake facilities, combined with the establishment of biological criteria for operation, the installation of state-of-the-art fish screens, and the reduction of reverse flows in Old and Middle Rivers, would reduce the entrapment of certain fish species into poor habitats and the entrainment of fish into the CVP/SWP system. By making these physical and operational changes in the Delta, the proposed project would address some of the many identified stressors to aquatic resources in the Delta. In addition, although not part of the WaterFix project, the State of California has launched a separate EcoRestore initiative to pursue the restoration and stewardship of 30,000 acres of floodplains, riparian forests, and wetlands within the Delta over the next four years. As this significant conservation effort was not part of the SDEIS, it was not reviewed or rated as part of our NEPA review.

Project Purpose and Need

As stated in the SDEIS, the purpose and need for the WaterFix project, as was the case for the BDCP, is to advance the co-equal goals set forth in the Delta Reform Act of 2009. Those are (1) to provide a more reliable water supply for California, and (2) to protect, restore, and enhance the Delta ecosystem. EPA recognizes the crucial public health, economic, and ecological importance of both goals. The proposed project and the alternatives evaluated in the SDEIS support the water reliability component, but largely defer actions necessary to protect water quality and aquatic life to the future.

As has been discussed throughout the development of this project, the most essential decision for achieving the desired balance between water reliability and restoration of the Bay Delta ecosystem is how freshwater flows through the Delta will be managed. This key decision is not described in the SDEIS and is, instead, deferred to future regulatory processes administered by the State of California in consultation with federal resource and regulatory agencies. The decision by the State of California and Reclamation to defer these decisions means that the impacts of the WaterFix project on the Delta ecosystem cannot be fully evaluated at this time, and that any attempt to describe the environmental impacts of the project is necessarily incomplete. Once those decisions, described below, are concluded, the evaluation of possible impacts and consideration of alternatives can be completed.

Aquatic Habitat and Water Quality

As noted above, the project has been significantly revised since the initial DEIS, yet the SDEIS relies on modeling results that are based on the BDCP alternatives. Information in the SDEIS indicates that the modeling completed for the BDCP alternatives is not necessarily representative of the environmental effects resulting from the WaterFix alternatives. NMFS and FWS concluded in 2008 and 2009, respectively, that continued operation of the CVP/SWP would jeopardize the existence of delta smelt, winter-run Chinook salmon, green sturgeon and several other fish species. Even with the predictive limitations of the modeling, the SDEIS predicts a loss of valuable aquatic habitat for many fish species in the Delta and upstream tributaries due to the combined effects of the WaterFix project, CVP/SWP exports, climate change, and increased water diversions upstream of the Delta in the Sacramento River Basin. These species have experienced sharp population declines in the last decade and showed record low abundance over the last five years. Information presented in the SDEIS shows that the WaterFix project could reduce habitat conditions for delta smelt, winter-run Chinook salmon, green and white sturgeon, striped bass, and American shad, and result in a decline of longfin smelt abundance. For example, according to the SDEIS, winter-run Chinook salmon and sturgeon may be negatively impacted when migrating past new intakes, because significant volumes of freshwater flows are diverted at the intakes resulting in less water that is also of lower quality downstream of the intakes. The SDEIS also predicts that selenium concentrations in sturgeon would increase by 12-19% as a result of the proposed project, and would exceed the FWS and NMFS benchmark for adverse impacts to sensitive species.

The modeling results presented in the SDEIS show predicted exceedances of a salinity standard at both Prisoner's Point and Emmaton. The water quality modeling predicts that the Western Delta and Suisun Marsh will become saltier over time, which is likely to cause increased exceedances of chloride criteria near municipal water supply intakes. Mitigation actions are identified in the SDEIS to prevent exceedances, and the compliance history shows that salinity standards have rarely been exceeded in non-drought years. Nevertheless, if the proposed project operations contribute to a general increase in salinity in the Delta, the flexibility that Reclamation and DWR have to operate the system to ensure that water quality criteria are met will be seriously diminished, and the two agencies will have little room for error in operating the system to protect beneficial uses and achieve the co-equal goals.

While the impacts stated above may be mitigated by appropriately timed increased flows and habitat restoration, the WaterFix project does not propose additional flows in the Delta, nor does it propose significant habitat restoration (See EcoRestore above). CVP/SWP operation scenarios that propose additional outflow, such as BDCP Alternatives 7 and 8 from the DEIS, could provide substantially more water for resident and migratory fish and provide benefits to aquatic life; however, these were not evaluated as alternatives in the SDEIS.

Pending Regulatory Actions

Several pending regulatory actions are important to understanding the full impacts of the project. First, the State Water Resources Control Board (State Water Board) will be acting on Reclamation's and DWR's recent request to add points of freshwater diversion from the South Delta to the Sacramento River in the North Delta (at the northern end of the new conveyance facility). This State regulatory action is likely to include terms and conditions, including flow requirements, that could modify proposed WaterFix operations sufficiently to produce environmental and water supply effects that have not been analyzed in the SDEIS. Additionally, the State Water Board is in the midst of comprehensively updating water quality standards through the Bay Delta Water Quality Control Plan (Bay Delta WQCP). The updated standards could result in freshwater flow management provisions and corresponding changes to water supply diversions throughout the watershed that have not been analyzed

in the SDEIS. The Delta is listed as impaired for several water quality parameters under Section 303(d) of the CWA. EPA is working closely with the State Water Board to ensure that the revised standards are sufficient to address impaired water quality conditions in the Delta and reverse the declines in the fish species. The updated standards could result in altered environmental and water supply impacts that have not been analyzed in the SDEIS.

Second, ESA Section 7 consultation with FWS and NMFS regarding the construction and operation of new conveyance facilities is underway. We understand that the FWS and NMFS are not relying solely on the SDEIS for the Section 7 consultation process and that additional information is being generated to identify criteria for operating the new WaterFix facilities, to be included in the Biological Opinions and Incidental Take Permits. This information and such operating criteria could result in environmental impacts that have not been analyzed in the SDEIS.

Third, construction of WaterFix's new water intake and conveyance infrastructure would require authorization under Clean Water Act Section 404, as well as a Rivers and Harbors Act Section 14 modification of levees permit, from the U.S. Army Corps of Engineers. Water quality and aquatic life analyses in the SDEIS show that the proposed project may cause or contribute to violations of state water quality standards and significant degradation of waters of the U.S.; therefore, additional avoidance and minimization of environmental impacts and/or compensatory mitigation may be necessary in order to comply with CWA Section 404. It is also likely that additional information and analysis not included in the SDEIS will be required to support those permit decisions and that information and analysis will better inform the overall evaluation.

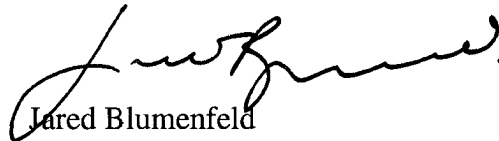
All of the above listed regulatory processes will develop new data and likely new compliance requirements beyond those provided in the SDEIS. EPA understands that these as yet incomplete regulatory requirements will be addressed through the pending actions by the State Water Resources Control Board, FWS, NMFS, and Corps of Engineers. These key decisions, and the analysis that will support them, are not yet done. Our statutory responsibility is to review the NEPA document that is in front of us at this time, however, the reality is that these future regulatory processes will have an important bearing on the project. Because these subsequent regulatory processes are likely to generate real world operational scenarios that are significantly different from the operations proposed in the SDEIS, the information is not yet available to reach definitive conclusions concerning the environmental impacts of the proposed project.

The tunnels that are discussed in detail in this draft NEPA document are an important improvement for water reliability, but the choices that will affect the operation of the tunnels, and thus the overall impacts of the project, will not be made until future regulatory actions are completed. These future decisions will supply the missing pieces necessary to determine the environmental impact of the entire project. The unusual circumstances of this project mean that the information is not yet available for a complete evaluation of environmental impacts – and for that reason a rating of “3” (*Inadequate*) for the SDEIS is required – but EPA expects that the project will continue to move forward, with those necessary additional pieces to be supplied as the later regulatory processes proceed. Under the unique circumstances of this case, the additional data, analysis and public input associated with these future regulatory processes are expected to provide the needed supplemental information to allow a full review of the environmental impacts without requiring another draft supplemental EIS. EPA will have the opportunity to support Reclamation, other federal agencies, and the State of California as they collectively continue to define an environmentally sound and effective project that would operate in a manner that simultaneously supports water supply reliability and enhances the Delta's ecosystem. EPA

believes that the upcoming actions by USFWS, NMFS, the State Water Board, and the Corps of Engineers will be critical next steps in the design and review of the project, and EPA looks forward to continuing to work with these agencies as the project moves forward.

If you have any questions, please contact me at 415-947-8702. Alternatively, your office may contact Kathleen Johnson, Enforcement Division Director. Ms. Johnson can be reached at 415-972-3873.

Sincerely,



Jared Blumenfeld

Bay Delta Conservation Plan/CA Water Fix
July 2015 – Public Draft RDEIR/SDEIS
CDFW Staff Comments
October 29, 2015

CDFW is appreciative of the continued opportunity to participate and comment in development of the NEPA/CEQA document for the BDCP/CalWaterFix. Overall we feel that the Recirculated EIR/EIS is an improvement over the Public Draft and are committed to continuing to provide our support in your development of a final document.

This review is focused on changes relevant to Alternative 4A. CDFW has not reviewed changes to the BDCP in detail and is not providing comprehensive comments regarding all the changes that have been made to the BDCP plan as described in the recirculated document.

Of most concern to CDFW is the basis of comparison for conducting the CEQA analyses. In the Draft EIR/EIS' analysis of the conservation plan-based alternatives, the analyses for certain aquatic species impacts from operations of the proposed project described the modeled project impacts as compared to Existing Conditions, but ultimately reached determinations on significance based on a comparison to the NEPA baseline, which uses the NAA_LL (i.e. 2060) conditions. The rationale for this approach was that it enabled partitioning of the effects of implementation of the alternative from the effects of sea level rise, climate change and future water demands. The recirculated EIR/EIS evaluates three new alternatives that are not proposed as conservation plans, and again for project operations' impacts to aquatic species, the analyses often reach significance conclusions based on a comparison to future conditions (NAA_EL) rather than a comparison to Existing Conditions. However, Alternative 4A is not a large-scale and long-term conservation focused only on construction of water conveyance facilities and associated mitigation which will be implemented on a much shorter time-frame of 10-15 years (the NAA_EL compares conditions out to 2025). We believe that the analyses should more clearly describe the project's impacts in comparison to Existing Conditions. We also recommend that further information needs to be described as to why the comparison to the "future conditions" baseline is justified based on unusual aspects of the project or conditions.

Additionally, our review found the following general concerns that are further explained in the attached comment tables:

- There are outstanding CDFW comments that have not fully been resolved from our June 2015 comments to the administrative draft revised EIR/EIS. We have included a separate document detailing these comments.
- Several of the effects analyses, results, and conclusions do not reflect current efforts being undertaken through the Section 7 process and discussions of the Fish and Game Code section 2081(b) permit application. CDFW generally understands that as these methods, analyses and results are finalized they will be included in the final EIR/EIS to ensure clarity and consistency.

- We had some difficulty in clearly distinguishing which of the HCP/NCCP elements carry over to Alternative 4A. This is particularly a concern regarding Avoidance and Minimization Measures, project operations criteria and other details of the BDCP that were not included or clearly referenced in the project description.
- Several of the mitigation measures and CEQA conclusions need additional clarification to demonstrate that they will be effective in reducing or eliminating impacts and can be feasibly implemented.
- The CEQA analyses for the proposed environmental commitments do not clearly demonstrate how each species' habitat requirements will be met when an environmental commitment targets species that utilize the same natural communities. The attached tables include several examples of cases where species with disparate habitat requirements are assumed to benefit from the same mitigation acreages. This is an important clarification necessary for ensuring that impacts to individual species are reduced to a less-than-significant level.
- The document does not clearly explain how modeled physical changes are translated into biological effects and subsequently how those biological effects are, or are not, then concluded to be significant/adverse, based on the significance thresholds articulated. If these determinations are based on professional experience, rather than a quantitative process that translates modeled physical effects into biological effects, then those determinations and the basis for the qualitative assumptions, should be made clear. As should the information about what species population estimates or species abundance indices these modeled effects are applied to in the assessments.

Should you have questions or want to discuss any of these comments please feel free to contact Chad Dibble, (916) 445-1202, chad.dibble@wildlife.ca.gov

Attachments: RDEIR_EIS CDFW comments_T errestrial
RDEIR_EIS CDFW comments_unresolved
RDEIR_EIS CDFW comments_Aquatic
RDEIR_EIS CDFW comments_Summary of CEQA Conclusions
RDEIR_EIS CDFW comments_Section 1
RDEIR_EIS CDFW comments_Section 5
RDEIR_EIS CDFW comments_Appendix3B
RDEIR_EIS CDFW comments_AppendixA Section8
RDEIR_EIS CDFW comments_AppendixD

Bay Delta Conservation Plan/CA Water Fix
July 2015 – Public Draft RDEIR/SDEIS
CDFW Staff Comments
October 30, 2015
Supplemental Document

The following provides a summary of CEQA conclusions (excerpts from Section 4 of the RDEIR/SEIS) in support of the general comment submitted as part of CDFW's comments on Section 4 fish and aquatic resources.

Under Alternative 4A, egg mortality (according to the Reclamation egg mortality model) in drier water years, during which winter-run Chinook salmon would already be stressed due to reduced flows and increased temperatures, would be up to 18% greater (absolute difference) than egg mortality under the CEQA baseline. The extent of spawning habitat and egg incubation conditions according to the SacEFT model are predicted to be 21% and 9% lower, respectively, on an absolute scale. Years with water temperatures at the red level of concern and exceedances above NMFS temperature thresholds would be substantially greater under Alternative 4A relative to the CEQA baseline. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of winter-run as a result of egg mortality, although, due to the highly suppressed population size of winter-run Chinook salmon relative to historical population sizes, it is unlikely that spawning habitat is currently limiting. (Section 4, p. 4.3.7-60)

Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce juvenile migration conditions for winter-run Chinook salmon upstream of the Delta. Under Alternative 4A, there would be reductions in flow and increased temperatures in the Sacramento River that could lead to biologically meaningful reductions in juvenile migration conditions, thereby reducing survival relative to Existing Conditions. Reduced migration conditions would delay or eliminate successful migration necessary to complete the winter-run Chinook salmon life cycle. Winter-run Chinook salmon juvenile survival through the Delta for Alternative 4A would be similar or slightly lower than for Existing Conditions. (Section 4, p. 4.3.7-72)

Under Alternative 4A (including climate change effects), there are flow and storage reductions, as well as temperature increases in the Sacramento River that would lead to biologically meaningful increases in egg mortality and overall reduced habitat conditions for spawning spring-run and egg incubation, as compared to Existing Conditions. Flows in the Feather River low-flow channel do not differ between Alternative 4A and Existing Conditions. However, water temperature analyses in the Feather River low-flow channel using thresholds developed in coordination with NMFS indicate that there would be moderate to large negative effects on temperature conditions during spring-run Chinook salmon spawning and egg incubation. (Section 4, p. 4.3.7-98)

Under Alternative 4A, there would be small to moderate flow reductions and temperature increases in the Feather River. SacEFT predicts improvements to spawning habitat availability for spring-run Chinook salmon in the Sacramento River under Alternative 4A and SALMOD predict slightly reduced habitat conditions. Exceedances above NMFS temperature thresholds would be higher under Alternative 4A relative to Existing Conditions. Results would be similar among model scenarios. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of spring-run Chinook salmon as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-109)

Under Alternative 4A, there would be moderate to substantial flow reductions and substantial increases in temperatures and temperature exceedances above thresholds in the Sacramento, Feather, and American Rivers, which would interfere with fall-/late fall--run Chinook salmon spawning and egg incubation. Biological models, including the Reclamation egg mortality model and SacEFT, predict substantially degraded spawning and egg incubation habitat conditions in the Sacramento, Feather, and American Rivers. These modeling results are generally consistent for H3_ELT and H4_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of fall-/late fall-run Chinook salmon as a result of egg mortality. (Section 4, p. 4.3.7-155)

Under Alternative 4A, including climate change effects, there would be persistent moderate flow reductions in the Feather, American, Stanislaus, Mokelumne, and San Joaquin Rivers, which would interfere with fall-/late fall--run Chinook salmon juvenile rearing habitat conditions. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat and substantially reduce the number of fall-/late fall-run Chinook salmon as a result of degraded juvenile rearing conditions. (Section 4, p. 4.3.7-167)

These modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for fall-/late fall-run Chinook salmon upstream of the Delta. Under Alternative 4A, instream flows would be lower in multiple upstream rivers during the fall-run Chinook salmon migration period relative to Existing Conditions, depending on scenario (H3_ELT or H4_ELT). Degraded migration habitat conditions would delay or eliminate successful migration necessary to complete the fall-run Chinook salmon life cycle. However, the impact of Alternative 4A across the operational range (Scenarios 23 H3_ELT and H4_ELT) on through-Delta migration conditions would be small due to generally similar juvenile survival and a minor effect on olfactory cues for adults. (Section 4, p. 4.3.7-192)

Under Alternative 4A, there are flow and cold water pool availability reductions in the Feather, American, and Stanislaus Rivers, as well as temperature increases in the Feather and American rivers that would lead to biologically meaningful increases in egg mortality and overall reduced habitat conditions for spawning steelhead and egg incubation, as compared to Existing Conditions. Alternative

4A would not have significant effects on steelhead spawning conditions in the Sacramento River, Clear Creek, San Joaquin River, or the Mokelumne River. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of steelhead as a result of egg mortality. (Section 4, p. 4.3.7-214)

Under Alternative 4A, there are flow reductions in the Feather, American, Stanislaus, San Joaquin, and Mokelumne Rivers and temperature increases in the Sacramento, Feather, American, and Stanislaus Rivers that would lead to reductions in quantity and quality of fry and juvenile steelhead rearing habitat relative to Existing Conditions. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of steelhead as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-229)

Under Alternative 4A, there would be reductions in flow in the Sacramento, Feather, American, Stanislaus, and Mokelumne Rivers that would lead to biologically meaningful reductions in juvenile and adult migration conditions, thereby reducing survival relative to Existing Conditions. Reduced migration conditions would delay or eliminate successful migration necessary to complete the steelhead life cycle. Alternative 4A would not affect migration conditions for steelhead in Clear Creek or the San Joaquin River. Water temperatures under Alternative 4A would generally be similar to those under Existing Conditions in all rivers examined. There would be minimal effects on through-Delta migration conditions because changes in juvenile survival and adult olfactory cues would be small. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for steelhead. (Section 4, p. 4.3.7-253)

Under Alternative 4A, flows would generally not differ in the Sacramento River. However, flows would be lower under Alternative 4A in the Feather and San Joaquin rivers and water temperature conditions would be degraded in all rivers examined relative to Existing Conditions. Results would generally be consistent between H3 and H4. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable spawning habitat and substantially reduce the number of green sturgeon as a result of elevated exceedances above temperature thresholds. (Section 4, p. 4.3.7-294)

Under Alternative 4A, water temperatures would be similar in the Sacramento River, although the exceedance above NMFS temperature thresholds in the Feather River would be higher under Alternative 4A than those under the CEQA baseline, which could increase stress, mortality, and susceptibility to disease for larval and juvenile green sturgeon. These modeling results are consistent among scenarios. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of green sturgeon as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-298)

Under Alternative 4A, there would be frequent small to large reductions in flows in the Sacramento and Feather Rivers upstream of the Delta that would reduce the ability of all three life stages of green sturgeon to migrate successfully. Exceedance of Delta outflow thresholds would be lower under Alternative 4A's H3_ELT scenario than under Existing Conditions, but would be similar or greater than under Existing Conditions for the H4_ELT scenario. Note that there is high uncertainty that year class strength is due to Delta outflow or if both year class strength and Delta outflows co-vary with another unknown factor. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce upstream migration conditions for green sturgeon. (Section 4, p. 4.3.7-303)

Under Alternative 4A, there would be small to moderate, persistent reductions in flows in the Sacramento, Feather, and San Joaquin Rivers that would cause biologically meaningful effects to white sturgeon spawning and egg incubation habitat. Further, there would be increases in exceedances of NMFS temperature thresholds in the Sacramento River that would cause a biologically meaningful effect to white sturgeon spawning and egg incubation. Results would generally be consistent between H3_ELT and H4_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce the quantity and quality of suitable spawning and egg incubation habitat. (Section 4, p. 4.3.7-325)

Under Alternative 4A, the exceedance of flow thresholds in the Sacramento River would be lower than under Existing Conditions. Exceedance of Delta outflow thresholds would be lower under Alternative 4A's H3_ELT scenario than under Existing Conditions, but would be similar or greater than under Existing Conditions for the H4_ELT scenario, although there is high uncertainty that year class strength is due to Delta outflow or if both year class strength and Delta outflows are co-varying with another unknown factor. Juvenile migration flows in the Sacramento River at Verona would be up to 31% lower in six (for H3_ELT) or seven (for H4_ELT) of 12 months relative to Existing Conditions. These reduced flows would have a substantial effect on the ability to migrate downstream, delaying or slowing rates of successful migration downstream and increasing the risk of mortality. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for white sturgeon. (Section 4, p. 4.3.7-326)

Collectively, these modeling results indicate that the impacts to Pacific lamprey spawning and egg incubation conditions would be less than significant. There would be no increases in exposure to redd dewatering that would affect more than 5 percent of the population in all rivers. Temperature exposure in the American River at the Sacramento River confluence would affect 15 percent more cohorts under H3_ELT, but there would be no other differences that would have a biologically meaningful effect to Pacific lamprey in any of the other 9 locations evaluated. Therefore, the impact is less than significant and no mitigation is required. (Section 4, p. 4.3.7-336)

Under Alternative 4A, the risk of redd dewatering would increase to some degree under some flow reductions in the Sacramento and Trinity rivers, and substantially in the American River at Nimbus Dam (increases from 34% to 238%). Flow reductions would increase the risk of ammocoete stranding and desiccation in these rivers. There would be a beneficial effect from decreased occurrence of flow reduction events (=reduced ammocoete stranding risk) in the Feather River (-8 19% to -64% for the 85% and 90% flow reduction categories) but this effect would not offset the more substantial reductions in the other locations. There would be an increase in exposure to critical water temperatures in most locations examined. Increased exposure to higher water temperatures would increase stress and mortality of ammocoetes. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of Pacific lamprey as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-343)

Collectively, these modeling results indicate that the effect is less than significant because it would not substantially reduce or degrade migration habitat or substantially reduce the number of fish as a result of mortality. There would be small to moderate negative effects of Alternative 4A on lamprey migration flows in the Sacramento River at Rio Vista, no effect (under H3_ELT) or moderately large benefits (under H4_ELT) in the Feather River, and no effect in the Sacramento River at Red Bluff and in the American River. Combined, these effects would not have a population level effect on Pacific lamprey. Therefore, the impact is less than significant and no mitigation is required. (Section 4, p. 4.3.7-348)

Under Alternative 4A, there would be moderate to substantial persistent increases in occurrence of flow reduction events for Alternative 4A with respect to Existing Conditions for the Trinity River (up 17 to 49%) and the American River at Nimbus Dam (up to 292%) and at the confluence with the Sacramento River (up to 270%) that would increase river lamprey ammocoete stranding risk and therefore rearing success for these locations. There would be a beneficial effect from reduced occurrence of flow reductions in the Feather River (up to 61% reduction) but this effect would not be sufficient to offset the negative effects from increased occurrence of flow reductions at the other locations. Further, stranding risk under H4_ELT in the Feather River would be higher than those under H3_ELT, such that the benefits under H3_ELT would not occur under these H4_ELT. There would also be increases under Alternative 4A in ammocoete cohort exposure to critical water temperatures in the Feather and American rivers that would have effects on rearing success through ammocoete mortality. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce rearing habitat and substantially reduce the number of river lamprey as a result of fry and juvenile mortality. (Section 4, p. 4.3.7-364)

Under Alternative 4A, there would be moderate and persistent flow reductions for substantial portions of the river lamprey macrophthalmia migration period in the American River, and less persistent and smaller magnitude flow reductions in the Sacramento River and Feather River. These flow reductions would affect juvenile migration success, increase straying, and delay access to the ocean. If in fact, lamprey use these cues to find natal spawning grounds, these flow reductions may also affect adult migration success, including a reduction in the ability for adults to sense olfactory cues. There would be

beneficial effects from increases in flow for some months and water year types in each location. However, this effect would not be sufficient to offset the negative effects of flow reductions for the remainder of the migration period and/or in other water year types, particularly drier water year types when effects of flow reductions would be more critical. Flows under H4_ELT would be less favorable than those under H3_ELT. Contrary to the NEPA conclusion set forth above, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce migration conditions for river lamprey. (Section 4, p. 4.3.7-367)

Collectively, flows would be lower under Alternative 4A during the adult largemouth bass residency period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce the quantity and quality of habitat for adults as a result of flow reductions. (Section 4, p. 4.3.7-416)

Collectively, flows would be lower under Alternative 4A during the juvenile and adult Sacramento tule perch occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat as a result of flow reductions. (Section 4, p. 4.3.7-423)

Collectively, flows would be lower under Alternative 4A during the year-round juvenile and adult Sacramento-San Joaquin roach occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the rearing period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce suitable rearing habitat as a result of flow reductions. (Section 4, p. 4.3.7-430)

Collectively, flows would be lower under Alternative 4A during the juvenile and adult hardhead occurrence period relative to Existing Conditions. Flows would be persistently and moderately to substantially lower in several rivers during substantial portions of the rearing period. Therefore, these modeling results indicate that the difference between Existing Conditions and Alternative 4A could be significant because the alternative could substantially reduce habitat for juvenile and adult hardhead as a result of flow reductions. (Section 4, p. 4.3.7-436)

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft—RDEIR/SDEIS Section 4, Terrestrial

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
Section 4.1				
1	4.1-5	12	The Project Description includes new construction and operations of the new conveyance and modified operations of existing facilities. Consistent with discussions in the Section 7 process and 2081(b) permit applications, there are also existing facilities, such as Suisun Marsh facilities, fish salvage operations, and the existing North Bay Aqueduct facility, with ongoing operations that are a part of the overall operations. Please add a description of existing facilities operations here for consistency with the Section 7 process and 2081(b) permit application.	
2	4.1-16	10	Please revise to make it clear that this description is in "Section 3.4.4, CM4 Tidal Wetland Restoration" of Appendix D".	
3	4.1-18	16	This section title Collaborative Science and Adaptive Management Program (or CSAMP) is confusing to the reader in that the text here and in the Collaborative Science section below is suggesting a new program that builds off of an existing program with the same name (CSAMP). We suggest renaming this section "Collaborative Science, Monitoring, and Adaptive Management" and further clarifying in the text how the new program will either continue the CSAMP/CAMT efforts or absorb them.	
4	4.1-18	21	AMMP does not seem like the appropriate acronym. Please revise to be consistent with the title. Also see comment on page 4.1-18, line 16 above regarding the title of this section.	
5	4.1-20	27	The funding and MOA section could use additional clarification regarding the assurances of funding, especially as it relates to compliance and effectiveness monitoring vs. adaptive management monitoring. Specifically, the "when feasible" statement is problematic, since it provides no commitment to this process or	

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			<p>clarification of how the agencies will be supported to participate in this process.</p> <p>E.g., the language above implies that monitoring and studies are needed so that the Collaborative Science program can inform intake design and construction of the screens. However, these actions should be taken as part of implementation, compliance, and effectiveness monitoring requirements and will most likely need to begin prior to an adaptive management program being developed.</p> <p>Additionally, Section 4.1.2.4 states that "the proposed compliance and effectiveness monitoring program for the CESA 2081b permit is described in Chapter 6 of that permit application". However, that information is not available for review as part of this EIR/EIS.</p>	
6	4.1-20	39-41	<p>The use of the phrase "the parties above" implies that CDFW will ensure availability of funding for monitoring associated with 2081(b) requirements.</p> <p>Please note that a condition of approval for an incidental take permit is that applicant has ensured adequate funding to meet their commitments under a 2081 permit.</p>	
7	4.1-37	32-34	<p>This states that the environmental commitments (ECs) and resource restoration and protection principles (RRPPs) are considered part of Alternative 4A, and not defined as mitigation measures (MMs). However, the analyses for many species reference RRPP requirements in order to meet proposed CEQA/NEPA mitigation in the absence of a proposed MM. Though RRPPs aren't defined as MMs for CEQA/NEPA compliance, they are treated as such in the species' impacts analyses. For example, the valley elderberry longhorn beetle (VELB) analysis states, "The acres of riparian protection and restoration proposed would satisfy the typical mitigation requirements described in the previous paragraph."</p> <p>Another consequence of the approach is that it makes it unclear and difficult to assess whether all impacts are ensured to be less than significant. Several comments below point out a conflict</p>	

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			<p>between the assumption that certain ECs will address impacts to multiple species, and species-specific habitat requirements that are not met by the related EC. This approach is left over from the BDCP, where the reserve system provided a very large buffer above minimum mitigation requirements. It would be much clearer if the EIR described the impact to a particular species and identified the appropriate level of mitigation for that impact, conditioned to meet the needs of that species, as an MM. It is possible that one mitigation area could meet the habitat requirements of multiple species and therefore satisfy multiple mitigation measures, but that may not always be true.</p>	
8	4.1-39	n/a	<p>Table 4.1.8 – VELB1: This objective has been carried over from the BDCP and does not quantify a number of acres out of 354 acres provided by ECs 3 and 7 that are required to mitigate for impacts to VELB. We suggest updating this RRPP to ensure mitigation needs for the species are met, because VELB may have unique requirements that do not overlap with other riparian species. For example, 100 of the 251 acres restored will be mature forest for WYBC (VFR2) that may not contain elements necessary for VELB’s use. Other riparian species’ commitments (such as 19 acres for RBR) may also not include elements necessary for VELB. Therefore, we suggest revising VELB1 to state that at least 78 acres restored by EC7 and 78 acres protected by EC3 have the elements described in VELB1 and VELB2.</p> <p>A similar comment on the VELB section of Section 4.3.8 was also submitted.</p>	
9	4.1-41	n/a	<p>Table 4.1.8-SHWA SH1: We suggest updating this RRPP to ensure that the mitigation needs for this species are met with specific acreage requirements based on anticipated impacts.</p>	
Section 4.3.4				
10	4.3.4-34	29-34	<p>It is unclear how the evaluation can conclude that the project will not substantially increase health risks to fish, when the analysis did not evaluate the risk. Appendix 8I states that the benchmark used to evaluate mercury risks in fish tissue were from the Delta Methylmercury TMDL (0.24 ppm in 350 mm LMB). However, that fish tissue target was developed for the protection of human</p>	

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			health, and not fish health. The TMDL did not develop fish tissue targets to protect the most sensitive life stages of fish to methylmercury toxicity (e.g., reproductive and early-life stages). The most recent science has estimated that less than 0.02 ppm methylmercury in reproductive tissues and early-life stage fish is necessary to protect from adverse effects. The current evaluation should include an assessment of impacts using this benchmark or equivalent. See comment on page 4.3.4-54.	
11	4.3.4-34	35-40	The State Water Board's Statewide Mercury Control Program for Reservoirs has determined that the magnitude of reservoir level fluctuations has been found to be positively correlated to reservoir fish tissue methylmercury concentrations (SWRCB 2015). If the project operations result in increasing the fluctuations of upstream reservoirs through re-operations, etc., then the project may impact reservoir fish methylmercury concentrations. The current environmental evaluation has not assessed this impact.	
12	4.3.4-54		Both NEPA Effects and CEQA Conclusions conclude that the project will result in no adverse impacts; however, the project is estimated to increase sturgeon (Green sturgeon is ESA listed) selenium concentrations to levels that will cause injury. This would be an exceedance of the Sacramento-San Joaquin River Basin Plan toxicity narrative objective because selenium would be present in concentrations that produce detrimental physiological responses in aquatic life. Furthermore, Linares-Casenave et al. (2014) suggests that sturgeon in the Bay-Delta could currently be at risk from selenium toxicity. The project would exacerbate toxicity to organisms that feed from the benthic food web.	
Section 4.3.8				
13	General comment		In general, CEQA analyses of proposed ECs do not consider differences in the habitat requirements of species which utilize the same natural communities. For example, EC 7 commits to riparian habitat restoration and protection. EC7 is expected to offset impacts to a wide variety of special-status species including least Bell's vireo, riparian brush rabbit, and special-status bat species. Although these three species use riparian habitat, their habitat requirements are different and not complimentary. Least Bell's	

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			vireo and riparian brush rabbit require early successional shrubby riparian vegetation. Special-status bat species require mature riparian habitat with large, established roost trees. As a result of these disparate habitat requirements, it is not appropriate to credit all of the proposed riparian habitat restoration and conservation as a benefit to all three species. However, refining the estimated acres of riparian habitat (in this example) to reflect the proportion of EC7 that would meet the specific requirements of each species would mean that CEQA mitigation ratios proposed in the document would not be met.	
Vernal pool crustaceans				
14	4.3.8-63	25-35	We suggest discussing potential impacts from recreation when describing EC 11. Although AMM37 (Recreation) is included in the discussion of Alternative 4A offsets to impacts (page 65, line 8), potential impacts from recreation should be discussed because vernal pool habitat is sensitive to human intrusion.	
15	4.3.8-65	23	AMMs listed below in the text minimize or avoid direct mortality. We suggest referencing these AMMs again in this sentence, in addition to habitat protection.	
16	4.3.8-65	34-42	There is no discussion of the AMMs that will offset these effects, and there is no discussion of impacts as a result of O&M after construction. We suggest discussing AMMs and O&M here to be consistent with the CEQA conclusion.	
Valley elderberry longhorn beetle				
17	4.3.8-66	27	"Planting shrubs in a high-density cluster" is too vague and inconsistent with the USFWS 1999 guidelines. Specify, per the guidelines: The planting area will be at least 1,800 square feet for each elderberry transplant, with as many as 5 additional plantings and up to 5 associated native species plantings within that same area.	
18	4.3.8-66	32	Assuming EC 3 is the same as CM3 (BDCP public draft), there are no acreage commitments for protecting valley elderberry longhorn beetle (VELB) habitat specifically. As a result, EC 3 does not contribute to meeting mitigation requirements and reducing impacts to VELB. The 103 acres of protected riparian habitat will be designed for other riparian species requirements that are not	

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			elderberry shrub obligates.	
19	4.3.8-67	8-10	Please either correct the habitat model, or base mitigation on the estimate provided by the habitat model.	
20	4.3.8-67	10-12	Conveyance facilities are not environmental commitments. Adjust terminology to indicate project impacts that result in these losses are water conveyance, transmission, and RTM, and EC 4.	
21	4.3.8-67	2, 6-7	Impact numbers do not agree with those presented in the draft BA.	
22	4.3.8-69	1-10, 41	VELB would need 78 acres of valley foothill riparian protected and 78 acres of valley foothill riparian restored according to the requirements outlined in the U.S. Fish and Wildlife Service conservation guidelines to meet proposed CEQA mitigation ratios described on page 4.3.8-68. It is not clear how much restored and protected valley foothill riparian habitat will be available to meet the specific habitat requirements of VELB and the proposed mitigation ratios. As a result, we cannot determine how the CEQA conclusion is supported by the available analysis and information. Please add details describing how proposed mitigation would meet VELB requirements.	
23	4.3.8-69	41-44	The CEQA conclusion should not assume that protection and restoration of habitat is greater than proposed mitigation ratios unless this exceedance is quantified in RRPP VELB1.	
Sacramento and Antioch dunes anthicid beetles				
24	4.3.8-76	30-43	Riparian conservation and restoration is unlikely to benefit these species because it is primarily designed to accommodate other riparian species requirements. Because sand bars and sand dune habitat would be incompatible with most riparian special status species requirements (ex. RBR, LBV, and WYBC), it is unlikely that proposed mitigation will benefit anthicid beetles.	
25	4.3.8-78	25-33	Nothing is known about the ability of either anthicid species to successfully disperse and establish in vacant available habitat. Additionally, the upstream abundance and distribution of the Sacramento anthicid beetle is essentially unknown. Given the combination of uncertain (at best) benefits from the project on these species (see comment on page 4.3.8-76, lines 30-43), and the strong likelihood of project impacts on known	

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			occurrences, we cannot determine how the CEQA conclusion of "less-than-significant" is supported by the information available. Please revise this section.	
Delta green ground beetle				
26	4.3.8-78	43-44	<p>There is no RRPP committing to protect grassland in CZ1. Alt 4A protects substantially fewer acres of grassland than the BDCP to mitigate for effects on other grassland-dependent species, mostly in CZs 7 and 8. For example, RRPP G10 protects 647 acres of grassland near Byron Hills, and 227 acres are committed to riparian brush rabbit (RBR5), leaving less than 200 acres that may be protected in CZ1.</p> <p>Vernal pool (VP) complex protection would benefit this species more than grassland. Most of the RRPPs for VP complex are intended to be conducted near Byron, and do not include the Jepson Prairie VP Core Area (see USFWS vernal pool recovery plan, Figure III-13c).</p>	
27	4.3.8-79	12-14	If grassland or VP complex restoration occurs in CZ1 it could impact Delta green ground beetle. Because specific locations are not stated in the RRPPs or Section 4.1.2.3, we suggest including additional discussion here regarding potential impacts of grassland or VP complex restoration projects to the species.	
28	4.3.8-79	36-38	Here again the assumption is made that protection of grasslands will occur in CZ1, though that siting commitment is not specified in Alternative 4A.	
29	4.3.8-79	6-7	We suggest including EC 8 as a potential impact.	
30	4.3.8-80	11-14 32-35	<p>Include restoration of grassland and VP complex as potential impacts unless it is specified in Alt 4A that they will not occur in CZ1.</p> <p>We suggest characterizing potential impacts as a result of ECs 3 and 11, unless it is specified in Alt 4A that protection of grassland will occur in CZ1.</p>	
31	4.3.8-80	43	Lands adjacent to Calhoun Cut and the west side of Lindsey Slough are within the species range according to this impact analysis and CNDDDB occurrence data.	

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Callippe silverspot butterfly				
32	4.3.8-81	20	Potrero Hills is not mapped as suitable habitat in Figure 12-12. It is also not included in the two populations recognized by USFWS (2009) or CNDDB.	
33	4.3.8-81	22-26	It is not specified in Alt 4A where grasslands will be restored. Unless specified in an RRPP or in Section 4.1.2.3 as not occurring in the Cordelia Hills/western edge of the project area, we suggest analyzing this restoration as a potential impact. This comment is related to another section below (page 83, lines 3-23).	
34	4.3.8-81	35-36	We suggest including EC 8 as a potential unknown impact, unless otherwise specified. This comment cascades to sections below (page 83, lines 3-23).	
35	4.3.8-83	3-23	Include site-specific management plans and restoration plans that would protect larval host plants and nectar sources. It should be clear that these plants will be protected and avoided during grassland restoration and management activities.	
Silvery legless lizard, San Joaquin coachwhip and Blainville's horned lizard				
36	4.3.8-107	27-28	Include EC 9 in the bulleted list of benefits to special status reptiles.	
37	4.3.8-107	6-7	California horned lizard (<i>Phrynosoma coronatum frontale</i>), later changed to Blainsville's horned lizard (<i>P. blainvillii</i>), will also occupy clearings in riparian woodlands (Jennings and Hayes 1994). We suggest analyzing riparian restoration as a potential impact. Riparian ECs would not benefit the species, because the structure and location of protected/restored riparian habitat is targeted to other species needs and, as a result, would not be compatible with special status reptile requirements.	
38	4.3.8-107	18-29	<i>P. blainvillii</i> also uses small mammal burrows and is associated with native perennial vegetation, such as <i>Sueda fruticosa</i> and <i>Atriplex polycarpa</i> (Jennings and Hayes 1994). We suggest also including RRPPs VP/AW1, VP/AW3, VP/AW5, VP/AW6, VP/AW7, G4, G5, and G6. These would also benefit the SJ Coachwhip.	
39	4.3.8-107	11-12	Historic museum records show <i>P. blainvillii</i> occurrences could have been extirpated within the study area (Jennings and Hayes 1994). This should be mentioned here, with reference to MM BIO-55 in lines 30-32.	

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40	4.3.8-108	12-13	This sentence states there would be a permanent effect on the San Joaquin coachwhip resulting from water conveyance facilities in CZ4. However, the model for these species (Figure 12-17) and the description on page 107 indicate that the Blainville horned lizard has potential habitat in CZ 4, not the San Joaquin coachwhip. Please revise this sentence.	
41	4.3.8-109 110	3 8-21	When analyzing impacts of Alt 4A, it would be appropriate to remove "noncovered" and "covered" species terminology. This is a global comment.	
42	4.3.8-109	5	Explain why O&M is expected to have little to no adverse effect; ie, because these species are not expected to occur in the area affected by O&M. Periodic effects would occur, if present.	
43	4.3.8-109	13-17	The risk of crushing <i>P. blainvillii</i> would not necessarily be lower during the active season, because the species uses crypsis to hide from predators and would be hard to spot from a moving vehicle. Seasonal risk reduction may be more appropriate for the coachwhip, but the risk of crushing the horned lizard during the active season should be discussed. BIO-55 and AMMs would minimize vehicle strike impacts more than operating during the active season. We also suggest noting that these reptiles would not be active under conditions of extreme temperatures and could be taking cover in burrows or crevices or under structures such as rocks or logs (Morey 2000). They could also burrow beneath the soil and be crushed by vehicles. If BIO-55 restricts work during extreme cold and heat (below 67 degrees F or over 100 degrees F), this would reduce the impact of being crushed by vehicles. <i>P. blainvillii</i> may only be active during the early morning and evening hours in the summer (Morey 2000).	
44	4.3.8-109	28-29	The existing habitat in Contra Costa County that ECs would connect to is potentially occupied by both the coachwhip and the horned lizard. Adding this information would strengthen the analysis.	
45	4.3.8-110	1-7	Strengthen the CEQA conclusion by also referencing the RRPPs suggested in our comment above on page 4.3.8-107, lines 18-29.	
46	4.3.8-110	15-16	MM BIO-55 is too open-ended in that it doesn't commit to protecting the individual(s) found if passive relocation is infeasible. We suggest consulting other CEQA documents, project reports, or	

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			<p>species guidelines to determine other methods that could be used to avoid harm to these species.</p> <p>Please explain how passive relocation would occur. If there is a guideline available, it should be referenced in the MM. Both the survey protocol and the relocation protocol should be approved by CDFW prior to construction.</p>	
47	4.3.8-110	22	<p>We suggest also discussing impacts from noise, night lighting, accidental release of petroleum or other contaminants, and the inadvertent discharge of sediment or excessive dust. These species are known to burrow under loose sand and could be affected by contaminated dirt or excessive sediment, as well as construction activities compacting the dirt and sand. Artificial night lighting could affect the behavior of reptiles, but little is known about the effects of light and noise. A CDFW-approved relocation plan could ensure relocated individuals are out of the footprint of noise and light (see comment on page 4.3.8-100, lines 15-16).</p>	
Greater sandhill crane				
48	4.3.8-136		<p>Please explain why EC 10 is described as removing foraging habitat and is listed as a benefit to greater sandhill crane and a driver for the "less-than-significant" CEQA conclusion on page 4.3.8-139 line 10.</p>	
Tricolored blackbird				
49	4.1-41	n/a	<p>RRPP TB1: We suggest revising the wording of RRPP TB1 to include the possibility of protecting non-marsh occupied TRBL nesting habitat.</p> <p>"TB1 - Protect and manage occupied or recently occupied (within the last 15 years) tricolored blackbird nesting habitat located within 3 miles of high-value foraging habitat in Conservation Zones 1, 2, 8, or 11. Freshwater marsh nesting habitat will be managed to provide young, lush stands of bulrush/cattail emergent vegetation and prevent vegetation senescence."</p>	
50	4.3.8-178	20-23	<p>Suggest changing this requirement to protect high- to very high-value foraging habitat within three miles of occupied or recently occupied nesting habitat to be consistent with the proximity requirement in the first bullet.</p>	

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51	4.3.8-181	22-29	As currently worded this language is too vague and doesn't technically require any avoidance of nesting colonies if the project proponent deems avoidance "infeasible". Also see comments on AMM 21 in Appendix D.	
Song sparrow "Modesto" population				
52	4.3.8-271	16-17	We suggest removing this sentence because it lacks an explanation of why project activities are expected to have little impact on the population. We suggest including the subsequent discussion of ECs and impacts in the CEQA conclusion instead.	
53	4.3.8-271	20-29	The song sparrow requires early successional riparian habitat with willow and a moderately dense understory with blackberry (California Partners in Flight and the Riparian Habitat Joint Venture 2004). VFR1 would have to guide all of the riparian mitigation for this species. Other RRPPs that would benefit this species and should be included are: GSC2, GSC3, TB1, TB4, and RBR1.	
54	4.3.8-272	18	WYBC could use a young forest about 4 years old (Detting and Seavy 2012), which could also be suitable for the song sparrow, as long as the brushy understory is present. "A period of time" could be specified as "at least 4 years".	
55	4.3.8-272	25-28	Other impacts that overlap with occurrences include the Intermediate Forebay (1 occurrence), access roads throughout the footprint (4 occurrences), and the CCF pumping area and conveyer (3 occurrences).	
56	4.3.8-273	30	MM BIO-75 should also be applied to O&M activities and added to this paragraph.	
57	4.3.8-274	39-40	We suggest adding RRPPs listed in comment on page 4.3.8-271, lines 20-29 to this section.	
58	4.3.8-275	8-11	There is not enough discussion in this section to explain why transmission lines are not expected to adversely affect the population. There are several occurrences of this subspecies overlapping potential transmission lines. The Modesto population's distribution is primarily in the Delta and concentrated near the proposed tunnel alignment. We suggest including information about the species' behavior and maneuverability and focus on the effectiveness of diverters in reducing strike hazard for passerines. For example, song sparrows have a low wingload ratio (Poole 1938)	

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			but broad, high-aspect wings. They are moderately vulnerable to strikes and were found under power lines in studies where diverters were not installed (Brown and Drewien 1995, Yee 2007).	
59	4.3.8-275	24-25	There are numerous studies on the effects of anthropogenic noise on song sparrows. Song sparrows rely heavily on song to defend territories and attract mates and research indicates that construction noise greater than 50 dB could cause the sparrows to change their singing behavior, which may threaten breeding in the vicinity of the proposed project (Wood and Yezerinac 2006). We suggest discussing this impact in more detail as a potentially significant effect without implementation of MM BIO-75.	
60	4.3.8-276	1-5	Please add more discussion that is specific to the song sparrow, which feeds on invertebrates. There are studies that indicate song sparrows are at high risk for methylmercury exposure, and the song sparrow was considered a biosentinal species for MeHg contamination affecting reproductive success in the San Francisco Bay estuary (Jackson, Condon et al. 2011). Jackson, Evers et al. (2011) found a 34% reduction in Carolina wren (a similar songbird) nesting success in mercury contaminated sites. We suggest describing mercury as a potentially significant impact without implementation of EC 12.	
61	4.3.8-277	2-3	There is research available which indicates the effects of mercury on breeding success. Jackson, Evers et al. (2011) state mercury concentrations above 0.4ppm (wet weight) translate to reproductive failure, and that concentrations in their study exceeded 2.5ppm, a level associated with a 50% decline in breeding success.	
62	4.3.8-277	1-13	Include discussion of selenium and AMM27 here.	
Special-status bat species				
63	4.3.8-306	20-22	This sentence states foraging habitat effects from water conveyance facilities and CM4 were not considered adverse because they convert one foraging habitat type to another. We suggest leaving effects from the water conveyance facilities out of this sentence so that effects can be stated separately from benefits. Effects from the water conveyance facilities would be adverse	

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			without environmental commitments, AMMs and MM BIO-166.	
64	4.3.8-305	11	Western small-footed myotis and Yuma myotis are also designated as Sensitive by BLM.	
65	4.3.8-305	19-21	Surveys for presence/absence of special-status bats were not sufficient to identify the species present at bridges within the project area. As a result, impacts should be assumed in places where bridges overlap with the alignment, or bat surveys should be conducted prior to project activities at bridges within 300 feet of project disturbance. For example, Figure 12-51 shows a bridge across the Banks pumping plant canal at the southwestern tip of CCF, adjacent to construction impacts. The South Mokelumne River bridge is about 300 feet from potential pressurized ventilation shaft construction on northeast Staten Island. If special status bats are using either of these bridges, they could be impacted by light, noise, vibration, and other disturbances, which would be offset with MMs. See comment on page 4.3.8-312, lines 41-42.	
66	4.3.8-306-307	31, 1-2	We suggest stating clearly that MM BIO-166 will be implemented at these bridge sites as well as other roost sites in the project area.	
67	4.3.8-308	5-8	It is unlikely that all, or even a majority, of the riparian habitat proposed for restoration and protection will provide adequate roosting habitat for special-status bat species. The same habitat is committed as mitigation for other riparian species (including least Bell's vireo and riparian brush rabbit) which require low lying shrub riparian habitat is unsuitable as bat roosting habitat. Additionally, the mitigation commitment for riparian habitat is not sufficient to meet the proposed CEQA/NEPA project level mitigation ratios for impacts to roosting habitat (lines 31-34). As a result of these discrepancies we cannot determine how the CEQA conclusion of "less-than-significant" is supported by the analysis and information available. Please revise to address these discrepancies.	
68	4.3.8-310	5	We suggest implementing surveys for special status bat species and MMs when direct impacts to roosting habitat (for example trees and bridges) or impacts within 300 ft of roosting habitat are anticipated.	
69	4.3.8-311	4	We suggest applying these protective measures to occupied structures and trees that are found to be used by the western red	

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			bat.	
70	4.3.8-310	35	We suggest requiring that survey protocols or guidelines for western red bat be implemented by a qualified biologist. For example, western red bats have a unique call that can be easily detected through acoustic surveys but are visible only from the vantage point of looking underneath them. This is probably the only SSC bat that would be found in the project footprint, so it should be addressed specifically.	
71	4.3.8-311	5-6	We suggest revising the avoidance timing to March 1 through October 31. The Townsend's big-eared bat conservation strategy states maternity colonies begin to gather in March and nursery colonies break up in September and October (Pierson, Wackenhut et al. 1999).	
72	4.3.8-311	11-12	It is not clear why the exclusion device season is split up between spring and fall, when Townsend's big-eared bat maternal sites could be active between March 1 and October 31. It would make more sense to have exclusion devices installed prior to project activities and prior to March 1, then not removed until after project activities at that location are completed.	
73	4.3.8-311	27	"Every effort should be made to avoid the roost," As currently stated this section holds no promise of avoidance and minimization. We suggest revising to state that every effort <u>will</u> be made to avoid the roost.	
74	4.3.8-312	17-23	This contradicts the proposed CEQA/NEPA mitigation ratios described on page 4.3.8-308. The mitigation acreages are not sufficient to meet proposed ratios for impacts to roosting habitat.	
75	4.3.8-312	24	Artificial roosts should only be designed in consultation with CDFW.	
76	4.3.8-312 - 313	41 - 42	We suggest adding a new MM with specific avoidance BMPs pertaining to indirect effects of lighting, noise, and vibration near sites where special status bat species are found. For example, we suggest requiring that noise barriers and lights be pointed inward or not extending 300 feet beyond the construction site for maintenance, operations or other activities in the measure. Or, effects could be avoided through buffers established under MM 166.	

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77	4.3.8-308	10-11	Reference ECs that specify what natural communities are included in the 15,194 acres. Although developed land may partially support foraging bats it should not be used for mitigation or included in the analysis for reduced significant impacts.	
78	4.3.8-308	33-34	Restoring up to 251 acres and protecting up to 103 acres of valley/foothill riparian does not meet the proposed mitigation ratio identified in the text.	
79	4.3.8-309	14	See comment on page 4.3.8-312, lines 41-42. If a new MM is included, add as part of the CEQA conclusion.	
80	4.3.8-309	17-18	RRPP G2 creates ponds for herps and has nothing to do with bats. We suggest removing this reference. G6 would benefit bats by increasing insect prey. G1, G3, and G4 could also be beneficial. CL1 and CL2 might also be worth mentioning.	
Redhead and tule greater white-fronted goose				
81	4.3.8-246	12	This sentence should reference Section 4.3.1.2, not 4.3.4.8.	
82	4.3.8-342 - 345	n/a	Tule greater white-fronted goose (TGWG) would not be affected by water conveyance construction or related activities and impacts because it is only found in Suisun Marsh west of Sherman Island. Unless tidal restoration is considered an impact in Suisun Marsh (not mentioned in the waterfowl section), there would be no impacts to this species based on current and known historic range and distribution. However, a habitat model could be created for the TGWG to determine if there are impacts on potential tidal or upland habitat outside of Suisun Marsh.	
83	4.3.8-342 - 345	n/a	ECs to restore or create tidal wetlands in the north and south Delta would not benefit TGWG, based on its current and historic range. The species would benefit from tidal marsh restoration and creation or protection of grassy uplands or high marsh in the vicinity of Suisun Marsh.	
84	4.3.8-342 - 345	n/a	Creation or protection of managed wetland for redhead would require a RRPP for the species that summer water is maintained greater than 1 meter deep. Otherwise, this would be a limiting factor for redhead breeding in the restored or protected wetland.	
		n/a	Redhead nests in the Yolo Bypass, but there appear to be no recent records in Suisun Marsh or the Delta. Due to the vast contraction of	

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			this species' range in this area, we suggest developing a MM to survey for the species on modeled habitat overlapping the project footprint, with a strong breeding season restriction measure if it is found or a revised version of MM BIO-75 (see comment on page 4.3.8-352, lines 37-39).	
85	4.3.8-349	1-3	Without a specific bird-strike analysis for diving ducks, such as redhead, it should not be assumed that diverters installed will reduce this impact to less than significant. APLIC (2012) reported different mortality rates between ducks and cranes. Additionally, ducks are slightly "poorer" fliers and myopic in the air. Though ducks do react positively to diverters, a risk assessment for this species would be appropriate, given how rare it is in the area.	
86	4.3.8-352	37 - 39	MM 75 is focused on land birds such as passerines nesting on terrestrial vegetation rather than flooded wetlands with emergent vegetation (Custer 1993). We suggest adding a MM similar to 75 which is customized to ducks, including redhead.	
Bank swallow				
87	4.3.8-280	37-38	Instead of stating "predicted flows under 4A would not be substantially greater," the conclusion could state that the model outputs indicate no substantial difference between 4A and Existing Conditions, if that is the case. It is important to elucidate the uncertainty of the model predictions as well as the complex variables of bank swallow habitat suitability, which compounds the need for mitigation.	
88	4.3.8-281	1-13	<p>We suggest revising BIO-147 to reflect the fact that bank swallow breeding colonies move along the river from year-to-year and are not necessarily found in fixed locations over time. Suggested revisions shown below.</p> <p>"To address the uncertainty of the impact of upstream spring flows on existing bank swallow habitat, DWR will monitor colonies upstream of the study area along the Sacramento and Feather Rivers, and collect habitat suitability data including soil type, number of active burrows per colony, and height of average burrows. Using survey data DWR will quantify the magnitude of spring flows that would result in potential mortality of active</p>	

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			<p>colonies each year. In addition, to determine the degree to which reduced winter flows are contributing to habitat loss, DWR will quantify the winter flows required for river meander to create suitable habitat through lateral channel migration and bank resurfacing. If impacts of upstream flows on bank swallow habitat or individuals are identified, replacement habitat will be established at a minimum of 2:1 for the length of bank habitat affected. Replacement habitat will consist of removing bank revetment to create habitat for bank swallow at a location subject to CDFW approval (Bank Swallow Technical Advisory Committee 2013)."</p>	
Short-eared owl and northern harrier				
89	4.3.8-237	39	<p>Please provide a list of the selected cultivated lands that were included in the model. We suggest including low-height crop types used for hunting small mammals (similar to Swainson's hawk, white-tailed kite, ferruginous hawk, and golden eagle) in this list. For example, the harrier uses alfalfa, grain, beets, tomatoes, and melons (Davis and Niemela 2008).</p>	
90	4.3.8-238	3	<p>We suggest adding ECs 3, 8 and 9 to this list as benefits to northern harrier (NOHA). The BSSC account states this species uses VP complex as well as annual, perennial, and ruderal grasslands. Grassland is the most important habitat type for both species, especially the short-eared owl (SEOW).</p>	
91	4.3.8-238	22	<p>SEOW and NOHA have different nesting habitat types than those specified in the parentheses in MM BIO-175 (marshes, grasslands, etc.). We suggest removing the parenthetical in MM BIO-175 so that the mitigation measure refers to all suitable habitat types for all species relying on it.</p>	
92	4.3.8-240	2-3	<p>Both the NOHA and SEOW are ground nesters. This language needs to be revised. Ground disturbance impacts could be more than a minor disturbance to suitable SEOW and NOHA ground nesting habitat. We suggest also adding a reference to MM BIO -175, as in the bullet below this paragraph.</p>	
93	4.3.8-240	5	<p>There is a word missing in this sentence. The sentence should state that these activities could impact SEOW and NOHA nests.</p>	
94	4.3.8-240	40	<p>NOHA also nests in grasslands, including those within a vernal pool matrix.</p>	

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95	4.3.8-240	43	Clarify that these species use the same foraging habitat as SWHA.	
96	4.3.8-241	6-7	Including ECs 8 and 9 as well as vernal pool complex protection would contribute to the analysis that environmental commitments far exceed proposed CEQA mitigation ratios. For example, though the CEQA analysis does not include restoration of grassland, EC 8 would benefit the species beyond the proposed mitigation ratio. This is important to point out since the environmental commitments are not necessarily tied to meeting compensation requirements under CEQA. We suggest presenting the ECs as voluntary conservation actions that benefit the species as much as, or more than, proposed CEQA mitigation ratios.	
97	4.3.8-241	36-37	Carry over ECs 8 and 9 to the CEQA analysis, per comment on page 4.3.8-241, lines 6-7.	
98	4.3.8-242	9-11	Please explain "ground-based foraging behavior" (ie, flying at low heights near the ground or hunting from the ground). SEOW occasionally hunts from a perch as well, but the perches are usually short (bushes, fence posts, etc.). A USFWS habitat model indicates trees are sometimes but rarely used (USFWS 2001). If the perch is high enough, this could increase the collision risk. The two species should be analyzed separately. NOHA has long, narrow high-aspect wings with low wing loading and good maneuverability. Owls have lower aspect wings which decrease their maneuverability. Therefore, the owls may have a low to moderate risk of collision, which would be reduced by the diverters.	
99	4.3.8-245	20-42	Selenium and AMM 27 are not discussed.	
Special-status plant species				
100	General comment		In general, the discussion of adverse impacts to plant species centers on impacts to occurrences, not suitable habitat. Proposed mitigation for impacts to occurrences is described in MM BIO-170. This approach does not acknowledge that impacts to suitable habitat also constitute an adverse effect, even if no individuals of a species are killed. Removing suitable habitat could extirpate existing seed banks and will ultimately restrict the range of a species. Eliminating suitable habitat could also diminish the ability of a	

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			<p>species to shift its distribution in response to future environmental changes (ex. climate change and development)</p> <p>According to Section 12.3.1.2 of the Public Draft BDCP EIR/EIS an adverse impact under CEQA would result if:</p> <p>“- A permanent reduction in the acreage and value of known occupied habitat for noncovered plant species</p> <p>- permanent reduction in the acreage and value of modeled habitats for special-status species”</p> <p>Although they weren’t analyzed as such, reductions in the amount of suitable habitat (occupied and unoccupied) constitute an adverse effect on sensitive plant species under the definition provided in the EIR/EIS. Additionally, the future viability of a species is likely to be diminished as a result of impacts to suitable habitat. Given these discrepancies we cannot determine how “less-than-significant” CEQA conclusions for special status plants are supported by the information available. Please address these discrepancies.</p>	
101	4.3.8-319	12-13	<p>“This could be an adverse effect, depending on whether or not the affected modeled habitat is actually occupied by the species.”</p> <p>See special status plant species general comment above. Please revise to address the discrepancies identified therein.</p>	
102	4.3.8-320	31-43	<p>We suggest referencing the 250 ft buffer here and in AMM11 to ensure that avoidance of special status plant species is achieved as intended.</p>	
103	4.3.8-321	20-22	<p>This statement is too vague to be evaluated in the context of a CEQA conclusion. Please quantify expected impacts to suitable habitat and all proposed mitigation of alkali seasonal wetlands and special status plant species which occur in this natural community. Also see special status plant general comment above regarding impacts to suitable but unoccupied habitat.</p>	
104	4.3.8-323	1	<p>Please add references to mitigation measure BIO-170 when discussing mitigation for impacts to grassland special-status plant</p>	

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			species to ensure consistency in the approach to all special-status plant species in the project area. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
105	4.3.8-330	1-12	Please add references to mitigation measure BIO-170 when referencing mitigation for impacts to tidal wetland special-status plant species to ensure consistency in the approach to all special-status plant species in the project area. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
106	4.3.8-330	29-36	Please revise to include a reference to the mitigation requirement established in BIO-170 to provide a clear statement of mitigation commitments associated with impacts to occurrences of special-status plant species. Also see the special status plant species general comment above regarding impacts to suitable but unoccupied habitat.	
107	4.3.8-330	39-41	Please add a reference to the mitigation requirement established in BIO-170 if an occurrence of side-flowering skull cap is impacted. Without this mitigation guarantee the impact on side flowering skullcap is more likely to be adverse as a result of impacts to suitable habitat combined with potential impacts to occurrences.	
San Joaquin pocket mouse				
108	4.3.8-303	34-37	<p>San Joaquin pocket mouse typically uses sparse, dry grasslands without dense invasive grass thatch. It is likely that a large part of the 1,060 acres of grassland committed in EC11 will not be suitable for San Joaquin pocket mouse because it will be immediately adjacent to aquatic habitat and intended as giant garter snake upland habitat. Additionally, the committed grassland acres do not achieve the 2:1 ratio proposed to mitigate impacts to San Joaquin pocket mouse under CEQA.</p> <p>As a result of these discrepancies, we cannot determine how the CEQA conclusion of "less-than-significant effect" is supported by the existing effects analysis and proposed mitigation. Please revise to address these discrepancies.</p>	
White-tailed kite				
109	4.3.8-	14	Please revise this sentence. It is misleading to state that all "effects	

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	202		to the species would be avoided” as a result of implementation of AMM39. The primary intention of AMM39 is to avoid the possibility of take of white-tailed kite as a result of project activities.	
110	4.3.8-205	40	EC 7 is listed as both an impact to white-tailed kite (removal of foraging habitat) and a benefit (creation of nesting habitat). Please include an additional sentence justifying a “less-than-significant” conclusion based on the fact that nesting habitat is a more limiting resource for white-tailed kite in the Delta than foraging habitat to explain this apparent discrepancy.	
Cooper’s hawk and osprey				
111	General		These species are different enough in their requirements (per comments below) to warrant separate impact analyses for each.	
112	4.3.8-217	36-37	As currently written AMM18 pertains only to SWHA nests, not Cooper’s hawk and osprey. We suggest adding a similar MM for Cooper’s hawk and osprey in Section 4. If planting mature trees will mitigate impacts on these species to less than significant, it should be specified in a RRPP (eg. appended to VFR1).	
113	4.3.8-218	3-5	RRPP VFR1 may not benefit osprey. Osprey need tall trees with open space for easy access over or near water. The species could benefit from Swainson’s hawk needs, but not necessarily from the needs of LBVI and other riparian passerines and small mammals that the objective is intended to benefit. VFR1 could benefit Cooper’s hawk, however, so rather than remove this measure, also reference CL1 (isolated trees) and VFR2 (mature trees) as benefits for osprey.	
114	4.3.8-218	6	First sentence: “Maintain a single contiguous patch of 100 acres of mature riparian forest...” was likely meant to be a bullet point to add to the paragraph above and would benefit osprey as suggested in comment on page 4.3.8-219, lines 3-5. Please clarify that this commitment is stated in an RRPP.	
115	4.3.8-218	19	Add a reference to Figure 12-33. The two species’ habitat requirements are not exactly the same. Ensure the model includes elements needed by both species (e.g., elements of SWHA breeding habitat) and include rationale as to why the model and impacts analysis do not include foraging habitat for these species.	

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116	4.3.8-219	7	Ventilation shafts and geotechnical exploration are also impacts to riparian habitat not mentioned here.	
117	4.3.8-219	13-15	Occurrence data in CNDDDB were likely submitted only up to the point each species was no longer SSC. If the data set used for the model doesn't include BDCP survey data, this would be an incomplete and outdated data set and should not be used for analysis of impacts.	
118	4.3.8-219	28-30	Nest trees should never be removed as part of EC 11 activities. These species' foraging habitats are not modeled or considered in the impact analysis.	
119	4.3.8-220	33	Replace reference to white-tailed kite with the species being discussed in this section.	
120	4.3.8-221	2-5	Foraging habitat for these species was not discussed in this analysis. Carrying over EC 7 from SWHA is not appropriate for these species. Osprey forage for fish in open water; and Cooper's hawk forage for primarily small birds and mammals, generally in forests with open or edge habitat, shrublands, and grasslands. One study indicated agricultural fields were avoided by Cooper's hawk (Stephens and Anderson 2002).	
121	4.3.8-221	30-31	See the general comment on osprey and Cooper's hawk. The CEQA conclusion should rely on MM BIO-75 and any additional MM or RRPP for the planting of mature trees that compensate for impacts on these species developed in response to the general comment above instead of referencing AMM18.	
122	4.3.8-222	1	Some hawks have low aspect (wider wings) than the best flyers on the scale, increasing susceptibility to collision (APLIC 2012). Osprey have long and slender high-aspect wings compared to other hawks, and this could attribute to good maneuverability and avoidance; whereas, Cooper's hawks have short, rounded wings with lower aspect, increasing susceptibility (Bildstein 2006, Cornell Lab of Ornithology 2015).	
123	4.3.8-222	4-5	Brown and Drewien (1995) did not show dramatic decreases in collision across all species, but they did imply that markers contributed to a lower observed rate of bird mortality. Buteo species (also low wing aspect hawks) were found dead under powerlines in both studies.	

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124	4.3.8-222	19	"General" maneuverability does not clearly justify this CEQA conclusion. Instead, we suggest that the conclusion state that osprey's high maneuverability and keen eyesight contribute to a minimal effect of collision. For Cooper's hawk, low-aspect wings could increase susceptibility, but low wing loading and good eyesight help to decrease susceptibility. Also, hawks do not tend to fly in flocks. If described in this way above (see comment on page 4.3.8-222, line 1), the CEQA conclusion could state that Cooper's hawk has a moderate level of susceptibility, but AMM20 would reduce this to a less than significant impact.	
125	4.3.8-222	44	Ospreys would be more susceptible to methylmercury exposure than Cooper's hawk, because they prey on fish.	
126	4.3.8-224	8-10	BIO-75 refers to surveys and buffers prior to construction. It does not specifically address operations and maintenance activities after construction. To rely on MM BIO-75 for this indirect effect, BIO-75 would need to be updated to include provisions addressing O&M activities.	
Ferruginous hawk				
127	general		We suggest separating ferruginous hawk analyses (FEHA) from golden eagle (GOEA) analyses. GOEA is a fully protected species and there appear to be differences in habitat requirements per the comments below.	
128	4.3.8-224	36-37	FEHA distribution appears to be correlated with lagomorph populations, so croplands may not provide long-term viability unless mixed into a grassland matrix (Hunting 2000). In contrast, GOEA is known to hunt for rabbits or other small mammals in most open areas. The habitat model for FEHA should focus more on the grassland complexes and only include agricultural land mixed with grassland or wetlands. Note that Figure 12-34 does not include the habitat model layer.	
129	4.3.8-225	4	Protecting cultivated lands may not benefit FEHA, per comment on page 4.3.8-224, lines 36-37 above. Changes in the distribution of FEHA could have resulted from conversion of grassland to agriculture, where such conversion did not negatively affect SWHA (Hunting 2000, Wiggins, Schnell et al. 2014). ECs 8 and 9, which would restore grassland complexes that have higher concentrations	

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			of rabbits, and protection of VP/ASW complexes in EC 3 would benefit FEHA as well as GOEA.	
130	4.3.8-225	23	Include EC 9.	
131	4.3.8-225	29	These impacts could eliminate both GOEA and FEHA habitat; the sentence just refers to GOEA habitat.	
132	4.3.8-226	12-13	As with other watch list species, CNDDDB may have fewer entries for FEHA after the species was taken off the BSSC list. FEHA was observed in Stone Lakes NWR (Appendix C, Stone Lakes NWR Conservation Plan); therefore, it could be within the vicinity of the intake structures.	
133	4.3.8-226	22	See comment on page 4.3.8-225, line 29. The same omission occurs here.	
134	4.3.8-226	28	Remove reference to SWHA habitat and replace with GOEA/FEHA.	
135	4.3.8-226	40	We suggest discussing O&M in its own paragraph/bullet point.	
136	4.3.8-227	16	Protecting 11,870 acres of cultivated lands may not meet the proposed mitigation ratio for FEHA, depending on how they use that agricultural landscape. Many of these acres would include crop types that benefit species other than FEHA. Foraging crops for SWHA could provide foraging for FEHA; but as noted above, FEHA uses ag land less than SWHA and is more negatively affected than SWHA by grassland conversion to agricultural fields. Intensive agriculture, as in most of the Delta, does not benefit FEHA. This may be a reason FEHA is rarely found in the Delta. We suggest conducting additional literature review and consulting experts to determine whether FEHA should have its own habitat model and impact analysis, as suggested in comment on page 4.3.8-224, lines 36-37 above.	
Double-crested cormorant, herons, and egrets				
137	4.3.8-229	17-18	Please explain why wetland and aquatic habitats were not modeled and included in this analysis. All taxa in this section nest in tidal and nontidal marshes (fresh water or saltwater). Cormorants nest on the ground and on the edges of aquatic habitats (Cornell Lab of Ornithology 2015).	

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			Cormorant nests were found on Wheeler Island in Suisun Bay and in Venice Cut (Schwarzbach and Adelsbach 2003). Great blue heron nests were found on Wheeler and Van Sickle Islands, Suisun Bay. Great egret nests have been found in Grizzly Island and Montezuma Slough (Schwarzbach and Adelsbach 2003). Tidal and nontidal marshes and open water (margins of lakes, rivers, ponds, and shallow water/mudflats) are also foraging habitat and should be included in the model.	
138	4.3.8-229	24-25	See comment on page 4.3.8-221, lines 30-31 (Cooper's hawk and osprey). We suggest removing references to AMM18 throughout the impact analysis.	
139	4.3.8-229	25-28	See comment on page 4.3.8-229, lines 17-18 above. We suggest including EC 3 (protection of 119 acres of nontidal marsh), EC 4, and EC 10 in the bulleted list as offsets for impacts to marsh nesting habitat. Channel margin enhancement would also benefit these species.	
140	4.3.8-230 - 233	all	Impacts shown in Table 12-4A-44 and described in the text below will change if impacts to marsh habitat are added per comment on page 4.3.8-229, lines 17-18. Will need to revise accordingly.	
141	4.3.8-233	40	Please add detail describing how all direct and indirect impacts on rookeries will be avoided to MM BIO-117. The MM should require surveys, buffers, and monitoring rookeries for disturbance in consultation with expert biologists, similar to MM BIO-75. MM BIO-117 should not be restricted to avoiding rookeries in riparian habitat, but include other habitat types where rookeries may occur (e.g., tidal or nontidal marshes, along the margins of aquatic features, etc.). Colonial nesters can be very sensitive to human disturbance. If one nesting bird is startled, the whole colony could abandon nests, resulting in many failed nests.	
142	4.3.8-231	4-6	We suggest adding a description or citation of the occurrence data sources referenced here. It is likely that few cormorant occurrences were submitted to CNDDDB after the species was removed from the BSSC list. Because egrets and herons are not special status species it is unlikely that many records have been submitted to CNDDDB.	
143	4.3.8-231	6	MM BIO-117 should also be mentioned here.	

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144	4.3.8-231	22-27	Localized ground disturbing activities could have more than a minor effect if they disturb cormorants nesting on the ground. Cormorants tend to nest on the ground after their nest trees fall over and die from stress and guano produced by a rookery (Cornell Lab of Ornithology). This impact to ground nesting cormorants should be discussed, along with MMs BIO-75 and BIO-117 which would offset any potential impacts.	
145	4.3.8-232	6	MM BIO-117 should also be mentioned here.	
146	4.3.8-232-233	35-43	We suggest adding a discussion of benefits to cormorants, herons and egrets from commitments to protect riparian habitat. Impacts to marsh habitat, and benefits associated with restoration and protection of marsh habitat, should also be discussed here. Taken together, it is likely that benefits of riparian and marsh ECs to cormorants, herons and egrets will exceed proposed CEQA mitigation ratios.	
147	4.3.8-232	29	Remove reference to white-tailed kite and replace with cormorants, herons, and egrets.	
148	4.3.8-233	21-34	CEQA conclusion should also be revised in response to comments on page 4.3.8-229, lines 24-25 and page 4.3.8-232, lines 35-43 above.	
149	4.3.8-233	32 and 34	Remove reference to Cooper's hawk and osprey and replace with cormorants, herons, and egrets.	
150	4.3.8-234	4-6	Remove sentence referring to least bittern and white-faced ibis.	
151	4.3.8-234	8	Global change: Brown and Drewien (1995) did not show dramatic decreases in collision across all species, but they did imply that markers contributed to a lower observed rate of bird mortality.	
152	4.3.8-234	34	MM BIO-117 should also be mentioned here.	
153	4.3.8-235	2	Please note that these species are especially susceptible to methylmercury because they consume fish. However, Schwarzbach and Adelsbach (2003) could be cited to state that cormorants, egrets, and herons in Suisun Marsh and the Delta had low enough levels to avoid embryotoxicity. This would supplement the discussion of lowered impact based on BDCP fish studies and EC 12.	

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154	4.3.8-235	16	Global change: replace "tropic" with "trophic"	
155	4.3.8-235	37-44	In addition to studies discussed in the general copy-paste language, we suggest discussing results presented in Schwarzbach and Adelsbach (2003) in this section. They found the highest selenium concentrations in great egrets, snowy egrets, and black-crowned night herons in SF Bay. The cormorants had slightly lower levels. However, selenium levels were below known embryotoxic thresholds and were weakly correlated with mercury concentrations. See also comment on page 4.3.8-235, line 2.	
Shorebirds and waterfowl				
156	4.3.8-342	34-41	We suggest adding a discussion of the potential for direct mortality of shorebirds and waterfowl as a result of construction activities in Clifton Court Forebay. Waterfowl and shorebird experts indicate that several species nest on the southern edge of the forebay, where dredging and forebay expansion are proposed. We suggest revising BIO-178 to include this potential impact and associated mitigation.	
157	4.3.8-342	17	We suggest including nontidal freshwater emergent wetland (marsh) natural community, which is separated from managed wetlands, grassland, and VP/ASW. These natural communities are also used by waterfowl and/or shorebirds (Shuford, Humphrey et al. 2004, Petrik, Petrie et al. 2012).	
158	4.3.8-342	24-31	RRPPs that could also benefit waterfowl and shorebirds include GGS3, GGS5, WPT1 and sandhill crane RRPPs. Some waterfowl and shorebirds benefit from rice, managed wetlands, and natural wetlands. Other waterfowl (greater white-fronted geese and tundra swan) use chopped corn fields(CFR and TNC In prep). EC 8, EC 9 and RRPPs G2 and G3 could also be included, per comment on page 4.3.8-342, line 17 above.	
159	4.3.8-342	34-39	We suggest adding a discussion of impacts to 506 acres of grassland habitat (Table 12-4A-10 on page 4.3.8-54) and impacts to VP/ASW which could adversely affect shorebirds and waterfowl. Also see comment on page 4.3.8-342, line 17 above.	
160	4.3.8-343	4-5	In some cases restored and protected acres would only provide suitable foraging habitat. For example, ducks forage in winter wheat	

No.	Page	Line #	Comment	ICF Response
			<p>and most of the shorebird species would be migrating, not nesting in the project area.</p> <p>We suggest adding restored grassland and protected/restored VP/ASW complex to this discussion per comment on page 4.3.8-342, line 17 above.</p>	
161	4.3.8-344	24-26	RRPP CBR1 does not guide the protection of cultivated lands. RRPPs suggested in our comment on page 4.3.8-342, lines 24-31 would be beneficial to offset these impacts.	
162	4.3.8-344	31-38	Waterfowl also breed in grasslands (Shuford, Humphrey et al. 2004). We suggest including a discussion of impacts to grasslands and protection and restoration of grasslands (ECs 3 and 8) in Impact BIO-180.	
163	4.3.8-343	34-35	EC 9 could also remove cultivated lands. We suggest discussing these potential impacts, or explaining why they are not included.	
164	4.3.8-343	34-35	It is not clear why loss of managed wetlands, grasslands, and tidal/nontidal wetlands is not included in this discussion. If ECs would not remove these habitat types, it should be stated here.	
165	4.3.8-344	37-38	Please describe the proportion of grassland, nontidal and tidal wetland habitat (commensurate with the proposed mitigation ratio) will be managed for breeding waterfowl while also meeting the needs of other species.	
166	4.3.8-345	1-3	See comments on page 4.3.8-343, lines 34-35 and page 4.3.8-344, lines 37-38 and update the CEQA conclusion accordingly.	
167	4.3.8-345	6-16	Vernal pool complex and alkali seasonal wetland also provide nesting habitat for American avocet (Shuford, Humphrey et al. 2004).	
168	4.3.8-345	10	Killdeer also nests in rice in the Sacramento Valley (Shuford, Humphrey et al. 2004).	
169	4.3.8-345	25-27	Same as comment on page 4.3.8-343, lines 34-35.	
170	4.3.8-345	26-27	See comment on page 4.3.8-344, lines 37-38. Not all 832 acres of restored nontidal marsh will be managed wetland. Natural nontidal wetland will also be restored as part of this commitment, as described on page 4.3.8-346, to benefit other species such as tricolored blackbird. All managed wetland may not meet the specifications for shorebirds. This analysis states the majority of	

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			<p>shorebird species require water depths of approximately 10-20 cm for foraging. However, diving ducks require deeper water for foraging and yellow-headed blackbirds require relatively deep water (up to 1.5 m) for nesting (Jaramillo 2008). On the other hand, Ivey, Herziger et al (2014) recommend 10 cm – 15 cm for crane roosting habitat, of which about 500 acres of managed wetlands will be created. It is also possible that some giant garter snake aquatic habitat would be suitable. We suggest revising this analysis to more accurately quantify the number of mitigation acres that will be managed in a manner suitable for shorebirds.</p>	
171	4.3.8-345	31	Please remove references to sandhill crane in this analysis.	
172	4.3.8-345	37-42	Not all of the cultivated lands impacted will be crops used by the shorebirds, as specified in the paragraph above. American avocets, black-necked stilts, and killdeer mostly use rice, which is rare in the Delta except in the northern Yolo Bypass.	
173	4.3.8-346	10-12	Same as comment on page 4.3.8-343, lines 34-35.	
174	4.3.8-346-347	23-41 1-5	<p>See comment on page 4.3.8-345, lines 26-27.</p> <p>The managed wetland analysis on page 4.3.8-345 assumes that 832 acres of created nontidal wetlands would benefit shorebirds that use managed wetlands. Only 500 acres of this habitat is required to be managed at depths suitable for sandhill crane and shorebirds. The remaining 332 acres of nontidal wetlands may not be managed at the appropriate depth for shorebirds. However, even if the 119 acres of protected nontidal wetlands from EC 3 are included in the analysis, it is unlikely that 832 acres of wetlands will be managed to benefit shorebirds.</p> <p>Please acknowledge and discuss potential conflicts between management for shorebirds and other nontidal marsh species in more detail. For example, managing water depths for shorebirds conflicts with yellow-headed blackbird nesting and diving duck foraging requirements. Please also revise the effects analysis and CEQA conclusion to address these discrepancies.</p>	
175	4.3.8-	6-37	We suggest adding a discussion of potential conflicts between	

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	347		management for shorebirds and other species which rely on cultivated lands. For example, removing stubble after harvest conflicts with waterfowl foraging needs; minimal vegetation adjacent to shallow water or on islands could conflict with GGS and CBRA needs for vegetated banks; flooding harvested potatoes conflicts with sandhill crane foraging but is compatible with geese (CFR and TNC In prep); different flooding regimes may be needed for the crane, geese, and/or SWHA foraging than recommended for shorebirds. If species-specific mitigation could be separated geographically, that would help resolve conflicts, but could be difficult to manage.	
176	4.3.8-348	14	Also include killdeer.	
177	4.3.8-348	29	We suggest adding a discussion of nontidal wetland to this CEQA conclusion. There are no impacts to this natural community anticipated, and some wetlands will be protected, restored, and managed for the benefit of the shorebirds. This could offset some of the loss of cultivated lands for those shorebird species that use both (such as killdeer).	
178	4.3.8-348	32-38	We suggest adding a more detailed discussion of transmission line impact risk. Shorebirds and waterfowl are particularly vulnerable to power line strikes due to wing loading and flocking behavior (Brown and Drewien 1995, Yee 2007, APLIC 2012). Brown and Drewien (1995) found that waterfowl constituted approximately 50% of transmission line strike mortality of all birds studied. We suggest discussing results of studies that show avian markers decreased mortality of waterfowl and shorebirds, and studies that found that American coots were still vulnerable to power line strike mortality after marker installation (Yee 2007, VWS 2015). To reduce risks to nocturnal flyers, such as coots, diverters should be illuminated (VWS 2015).	
179	4.3.8-349	41-44	Please explain why largemouth bass was used as a surrogate species. Why it is considered more conservative than shorebirds and waterfowl, or other fish-eating species such as diving ducks and terns? Ackerman, Eagles-Smith et al (2014) indicate that fish Hg concentrations did not adequately predict avian risk to exposure,	

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			and that egg monitoring more accurately reflects the impacts of Hg on birds. They found MeHg concentrations in many adults and eggs in the SF Bay estuary exceeded levels of toxicity. We suggest discussing the results of this study and adding an adaptive management strategy that includes monitoring mercury levels in shorebird and waterfowl eggs.	
180	4.3.8-350	4	The risk of mercury exposure varies among shorebird species and locations. Shorebirds that forage on fish and in managed wetlands in Yolo Bypass or Suisun Marsh are at a higher risk than other shorebirds. Ackerman, Eagles-Smith et al. (2014) provide an example of elevated concentrations of methylmercury in black-necked stilts due to foraging in managed wetlands and on fish.	
181	4.3.8-351	16-17	There is no EC 5 described in Section 4.1.2.3. Please revise to clarify this sentence and add a reference to nontidal restoration, EC 10.	
182	4.3.8-352	17	We suggest adding tidal habitat, nontidal habitat, and floodplain restoration to this sentence as agents of increased selenium exposure. Waterfowl that consume sessile bivalve clams and other benthic filter feeders would be exposed to additional, and potentially toxic, levels of selenium. Without AMM27 this would constitute a significant impact.	
Section 4.3.25				
183	4.3.25-8	38	Because Section 4.3.25 does not generally rise to the level of analysis, the use of the phrase “analyze and disclose” is not appropriate. Consider substituting the phrase “discuss conceptually”.	
184	4.3.25-9	19	The sentence beginning here seems to turn the operating concept for the CWF on its head. In reality, diversions at the proposed NDDs will only be allowed if Sacramento River inflows are adequate to protect downstream species habitat and water quality conditions. This is an important concept to ensure that the water operations “flexibility” afforded by the proposed NDDs is not used to the detriment of Delta aquatic species.	
185	4.3.25-9	28	Here the document makes confusing use of the term “entrapment zone”. Biologists generally use this term to describe the estuary’s saltwater/freshwater interface. For the purposes of this comment it is assumed that the author is referring to something like the	

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			<p>“zone of entrainment”. It is important to note here that the purpose positioning X2 further downstream goes beyond reducing entrainment. For species such as Delta smelt, longfin smelt, and <i>Crangon franciscorum</i> downstream positioning of X2 increases the quantity and quality of habitat, and improves transport to that habitat. The relative ease of using inflows to move saltwater downstream from the proposed NDDs would probably result in a constriction of habitat for some species, in particular Delta smelt rearing in the important lower Sacramento River reach (below Rio Vista).</p>	
186	4.3.25-9	37	<p>The ECs remaining in the CWF are generally designed to mitigate for project related impacts. As such, and unlike the BDCP, they don't result in a net gain in habitat quantity or quality.</p>	
187	4.3.25-9	42-45	<p>Because Alternative 4A seeks authorization for take of state and federally listed species through a 2081(b) permit and Section 7 Biological Opinion, the project proponents are required under section 2081(b) to ensure impacts of the authorized taking are minimized and fully mitigated. A mitigation standard differs substantially from the standard underlying Alternative 4, and established by the Natural Community Conservation Planning Act, to conserve and manage covered species within the Plan area. Although the NCCPA's standard may be sufficient to facilitate species resiliency to climate change, habitat restoration and preservation proposed in Alternative 4A is not sufficient.</p>	
188	4.3.25-10	3-11	<p>We suggest removing this paragraph because it is based on general conclusions that are unsupported by current ecological and evolutionary theory. Many environmental factors (abiotic <i>and</i> biotic) limit the distribution and abundance of native species. The assumption that ameliorating one specific stressor on a listed species in the Delta will result in increased population sizes is speculative and unfounded. Additionally, although population size can be an important factor in determining species resiliency in response to environmental change, the capacity of a species to express adaptive phenotypic plasticity and the level of genetic variation within and among populations are more important determinants of species persistence over the short- and long- term.</p>	

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			Increasing genetic variation within and among populations of threatened and endangered species would require, at a minimum, sustained long term increases in population sizes across many generations.	
189	4.3.25-10	8	Predator control at the NDDs is intended as mitigation, not enhancement, to offset the predation problems otherwise created by the presence of the NDDs. Also, the benefit of predator control at CCF is easily overstated, because the south Delta export facilities will often not be operating winter-spring entrainment season, and the period of preferential southern diversion is generally after the entrainment season.	
190	4.3.25-10	9	The use of the term "will" here is too optimistic. At this point the net benefits of the NPB are still uncertain.	
191	4.3.25-10	17	Are the "interties" referenced part of the project? If not, their suggested use is speculative.	

References Cited

Ackerman, J., C. A. Eagles-Smith, G. Heinz, S. De La Cruz, J. Y. Takekawa, A. Miles, T. Adelsbach, M. Herzog, S. Bluso-Demers, G. Herring, D. Hoffman, C. Hartman, J. Willacker, T. Suchanek, S. Schwarzbach and T. Maurer (2014). Mercury in birds of San Francisco Bay-Delta, California - Trophic pathways, bioaccumulation, and ecotoxicological risk to avian reproduction. US Geological Survey and US Fish and Wildlife Service, Environmental Contaminants Division. USGS Survey Open-File Report 2014-1251. Available: <http://dx.doi.org/10.3133/ofr20141251>.

APLIC (2012). Reducing avian collisions with power lines: the state of the art in 2012, Edison Electric Institute and Avian Power Line Interaction Committee (APLIC), Washington, DC.

Bildstein, K. (2006). Migrating raptors of the world - their ecology and conservation, Cornell University Press, Ithaca, NY.

Brown, W. M. and R. C. Drewien (1995). Evaluation of two power line markers to reduce crane and waterfowl collision mortality. *Wildlife Society Bulletin*. **23**: 217-227.

California Partners in Flight and the Riparian Habitat Joint Venture (2004). Version 2.0 The riparian bird conservation plan: A strategy for reversing the decline of riparian associated birds in California.

CFR and TNC (In prep). Population trends, habitat selection and food availability for sandhill cranes and large waterfowl on Staten Island and associated management recommendations. Conservation Farms and Ranches (CFR) and The Nature Conservancy (TNC). 2014-15 Annual Report.

Cornell Lab of Ornithology (2015). All about birds - Cooper's hawk [Internet]. Cornell University, Ithaca, NY. Available: www.allaboutbirds.org/guide/Coopers_Hawk/id. Accessed: October 16, 2015.

Cornell Lab of Ornithology (2015). All about birds - Double-crested cormorant [Internet]. Cornell University, Ithaca, NY. Available: https://www.allaboutbirds.org/guide/Double-crested_Cormorant/id. Accessed: October 19, 2015.

Custer, C. (1993). Life history traits and habitat needs of the redhead. US Fish and Wildlife Service, Northern Prairie Wildlife Research Center, La Crosse, WI. Fish and Wildlife Leaflet 13.1.11. Available: http://www.nwrc.usgs.gov/wdb/pub/wmh/13_1_11.pdf.

Davis, J. and C. Niemela (2008). Northern harrier (*Circus cyaneus*). In California bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA. pp. 444-450.

Detting, M. and N. Seavy (2012). Yellow-billed cuckoo survey effort along the Sacramento and Feather Rivers: 2012. Prepared for California Department of Fish and Game. PRBO Conservation Science, Petaluma, CA.

Hunting, K. (2000). Ferruginous hawk (*Buteo regalis*). In Version 1.0. The draft grassland bird conservation plan: A strategy for protecting and managing grassland habitats and associated birds in California [Internet]. Point Reyes Bird Observatory, Stinson Beach, CA. Available: <http://www.prbo.org/calpif/htmldocs/species/grassland/fehaacct.html>. Accessed: October 15, 2015.

Ivey, G., C. Herziger and D. Hardt (2014). Conservation priorities and best management practices for wintering sandhill cranes in the Central Valley of California. Prepared for The Nature Conservancy. International Crane Foundation, Baraboo, WI.

Jackson, A., A. Condon, M. Etterson, D. Evers, S. Folsom, J. Detweiler, J. Schmerfeld and D. Cristol (2011). The song sparrow as a biosentinel for methylmercury in riparian food webs of the San Francisco Bay area. Poster prepared by the San Francisco Estuary Institute, Oakland, CA. Available: http://www.sfei.org/sites/default/files/biblio_files/ARobinsonSOE2011_draft3.pdf.

Jackson, A., D. Evers, M. Etterson, A. Condon, S. Folsom, J. Detweiler, J. Schmerfeld and D. Cristol (2011). Mercury exposure affects the reproductive success of a free-living terrestrial shorebird, the Carolina wren (*Thryothorus ludovicianus*). *The Auk*. **128**: 759-769.

Jaramillo, A. (2008). Yellow-headed blackbird (*Xanthocephalus xanthocephalus*). In California bird species of special concern. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Jennings, M. and M. Hayes (1994). Amphibian and reptile species of special concern in California. Prepared for the California Department of Fish and Game, Inland Fisheries Division. California Academy of Sciences, Department of Herpetology, San Francisco, CA; Portland State University, Department of Biology, Portland, OR; and Metro Washington Zoo, Animal Management Division, Portland, OR. Final Report.

Linares-Casanave, J., R. Linville, J. Van Eenennaam, J. Muguet and S. Doroshov (2014). Selenium tissue burden compartmentalization in resident white sturgeon (*Acipenser transmontanus*) of the San Francisco Bay Delta Estuary. *Environmental Toxicology and Chemistry*. **9999**: 1-9.

Morey, S. (2000). California wildlife habitat relationships system: Blainville's horned lizard. California Department of Fish and Wildlife, California Interagency Wildlife Task Group, Sacramento, CA. R029.

Petrik, K., M. Petrie, A. Will and J. McCreary (2012). Waterfowl impacts of the proposed conservation measure 2 for the Yolo Bypass - an effects analysis tool. Prepared for Yolo Bypass Fisheries Enhancement Planning Team. Ducks Unlimited, Western Regional Office, Rancho Cordova, CA.

Pierson, E., M. Wackenhut, J. Altenbach, P. Bradley, P. Call, D. Genter, C. Harris, B. Keller, B. Lengus, L. Lewis, B. Luce, K. Navo, J. Perkins, S. Smith and L. Welch (1999). Species conservation assessment and conservation strategy for the Townsend's big-eared bat. Idaho Department of Fish and Game, Idaho Conservation Effort, Boise, ID.

Poole, G. (1938). Weights and wing areas in North American birds. *The Auk*. **55**: 511-517.

Schwarzbach, S. and T. Adelsbach (2003). Assessment of ecological and human health impacts of mercury in the Bay-Delta watershed. Prepared for California Department of Fish and Game, CALFED Bay-Delta Mercury Project. Draft Final Report.

Shuford, W., J. Humphrey, R. Hansen, C. Hickey, G. Page and L. Stenzel (2004). Patterns of distribution, abundance, and habitat use of breeding black-necked stilts and American avocets in California's Central Valley in 2003. Prepared for the Central Valley Shorebird Working Group. Point Reyes Bird Observatory, Stinson Beach, CA. Draft Final Report.

Stephens, R. and S. Anderson (2002). Conservation assessment for the Cooper's hawk and sharp-shinned hawk in the Black Hills National Forest, South Dakota and Wyoming. University of Wyoming, Wyoming Cooperative Fish and Wildlife Research Unit, Laramie, WY.

SWRCB (2015). Statewide mercury program: Addressing mercury in California's waters [Internet]. State Water Resources Control Board (SWRCB), Sacramento, CA. Available: http://www.waterboards.ca.gov/water_issues/programs/mercury/. Accessed: October 19, 2015.

USFWS (2001). Short-eared owl habitat model [Internet]. US Fish and Wildlife Service, Guld of Maine Watershed Habitat Analysis. Available: http://www.fws.gov/r5gomp/gom/habitatstudy/metadata/short-eared_owl_model.htm. Accessed: August 2015.

USFWS (2009). Callippe silverspot butterfly (*Speyeria callippe callippe*) 5 year-review: Summary and evaluation. US Fish and Wildlife Service, Sacramento Fish and Wildlife Office (USFWS), Sacramento, CA.

VWS (2015). Avian risks associated with power lines and wind energy. Ventana Wildlife Society (VWS), Salinas, CA. Available: <http://www.ventanaws.org/conservation/powerlines.htm>. Accessed: October 19, 2015.

Wiggins, D., G. Schnell and D. Augustine (2014). Distribution and nesting success of ferruginous hawks and Swainson's hawks on an agricultural landscape in the great plains. *The Southwestern Naturalist*. **59**: 356-363.

Wood, W. and S. Yezerinac (2006). Song sparrow (*Melospiza melodia*) song varies with urban noise. *The Auk*. **123**: 650-659.

Yee, M. L. (2007). Testing the effectiveness of an avian flight diverter for reducing avian collisions with distribution power lines in the Sacramento Valley, California. Prepared for the California Energy Commission, PIER Energy-Related Environmental Research Program, Sacramento, CA. CEC-500-2007-122.

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: *July 15, 2015 Public Draft—RDEIR/SDEIS Section 4 – previous unresolved June 2015 comments on Administrative Draft*

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

Note: All page and line numbers correspond to the second Administrative Draft RDEIR/SDEIS submitted to CDFW for review in June 2015.

No.	Page	Line #	Comment	ICF Response
Lesser sandhill crane				
1	4.3.8-150	17-19	<u>Comment on administrative draft:</u> Refer to the habitat model developed in Chapter 12, Alternative 4, for lesser sandhill crane foraging habitat and use area.	Not addressed ICF stated the model is the same for both subspecies. The BDCP model for GSCR (Appendix 3A) is not the same as the LSCR model (Figure 12-22). The LSCR model shows foraging habitat as far south as CCF, while the GSCR model cuts foraging habitat to north of Discovery Bay. Neither model depicts “roosting and foraging” separate from “foraging”.
2	4.3.8-151	27	<u>Comment on administrative draft:</u> Be sure foraging habitat impacts are analyzed against the lesser crane model and not the greater crane model. There should be a different number here based on the additional foraging habitat south of the GSCR foraging habitat and winter use area, as far south as Clifton Court Forebay.	Partially addressed ICF stated that the impacts analysis uses the LSCR model, limited to the crane use area, and that the impact analysis focuses on the area where cranes are present. Gary Ivey’s “crane use area” is depicted as the GSCR winter use area in BDCP Appendix 3A. It is not clear where the LSCR crane use area is, as delineated by G. Ivey, and if it matches the foraging habitat model in Figure 12-22. Please explain if this analysis is based on the LSCR winter use area. Impacts to foraging habitat for both subspecies are not the same, due to LSCR foraging a greater distance from roosting sites than GSCR. The numbers reflect higher impacts for LSCR foraging habitat, but this is not well explained.
3	4.3.8-152-153	35-46 1-13	<u>Comment on administrative draft:</u> Impacts described appear to be confined to the greater sandhill crane use area and do not include impacts south of the area in the modeled foraging habitat for lesser sandhill crane. We suggest updating this analysis to include impacts	Partially addressed <u>ICF response:</u> “impacts are for lesser sandhill crane use area which is very similar to GSHC boundary but there is more foraging habitat impacted by the conveyance facility

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			south of Venice Island.	because of the increased foraging distance from roost sites." <u>Follow up comment:</u> We suggest adding a reference to the LSCR use area and clarifying how "roosting and foraging" habitat differs from "foraging" in the LSCR model (e.g, if "roosting and foraging" is restricted to the GSCR use area or if it contains only mapped roost sites). This section does not describe impacts from roads, access shafts, transmission lines, or geotech on Mandeville and Bacon Islands, which overlap modeled foraging habitat in both subspecies models, but not roosting habitat. This analysis is still incomplete without a clear description of what is being analyzed.
4	4.3.8-153-154	18-25 1-10	<u>Comment on administrative draft:</u> Table 12-4A-31. Update these numbers based on comments above (lesser sandhill crane foraging habitat model, not greater sandhill crane model). The same with EC impacts that follow.	Same as status as comments on page 4.3.8-151, line 27 and page 4.3.8-152, lines 35-46.
5	4.3.8-154-155	40-43 1-2	<u>Comment on administrative draft:</u> Same as comment on pages 4.3.8-153-4.	Same as status as comments on page 4.3.8-151, line 27 and page 4.3.8-152, lines 35-46.
6	4.3.8-155	7	<u>Comment on administrative draft:</u> This number would change if impacted foraging acres are adjusted. Need to ensure restoration/protection still meets or exceeds the 1:1 mitigation requirement for foraging habitat.	See status of comments on page 4.3.8-151, line 27 and page 4.3.8-155, line 39 (below). If 4811 acres of foraging habitat will be protected for both subspecies based on impacts to LSCR foraging habitat, this would meet the proposed 1:1 mitigation for LSCR.
7	4.3.8-155	39	<u>Comment on administrative draft:</u> This number needs to be consistent with the number in the greater sandhill crane section; the greater section probably needs to be updated.	Partially addressed Page 146, line 38 was not updated to 4811 for LSCR or for GSCR on page 132, line 34. Restoration and Performance Principle GSC1 does not specify acreage. If 4811 acres of foraging habitat will be protected, the change needs to be cascaded to these sections.
8	4.3.8-157	3	<u>Comment on administrative draft:</u> Include "and AMM30 Transmission Line Design and Alignment Guidelines."	Not addressed <u>ICF response:</u> "Included AMM30." Reference to AMM30 does not appear in this section.
9	4.3.8-157	19	<u>Comment on administrative draft:</u> Remove the word "dramatically".	Not addressed, global comment.

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10	4.3.8-158	39-40	<u>Comment on administrative draft:</u> Also discuss benefits of implementing AMM 30 here.	Not addressed <u>ICF response:</u> "added AMM30". AMM30 is not referenced in the CEQA conclusion.
11	4.3.8-163		<u>Comment on administrative draft:</u> There should be an inundation section for this species even though there are no impacts, for consistency with other species.	Partially addressed Throughout the document inundation impact headers are not included where there are no impacts anticipated. Those sections need to be removed to provide consistency.
Least Bell's vireo and yellow warbler				
12	4.3.8-165	35	<u>Comment on administrative draft:</u> AMMs are not described below, they are listed below. They are described in Appendix 3.C of the draft BDCP and in Appendix D.	Not addressed It is still not clear in this section which AMMs are being referred to for O&M.
13	4.3.8-165	36-38	<u>Comment on administrative draft:</u> There should be a discussion here about yellow warbler nesting in the study area as well. The BSSC account (Heath 2008) states the species is largely extirpated as a breeder in the Delta; however, nests were found in the SJRNWR in 2002 and 2003. Therefore, reestablishment of a breeding population of yellow warbler is also possible.	Partially addressed <u>ICF response:</u> "Possible but unlikely over the new permit term. Added text to clarify." Text was changed to clarify. However, we suggest acknowledging the possibility of at least one breeding pair of either species occurring during the project term, rather than assuming such presence is unlikely. Many sources imply riparian restoration could bring in one or more breeding pair(s) of either species (USFWS 2005, Heath 2008). The LBVI detections in the Yolo Bypass were singing males, and the CalFed program considered these detections a result of successful restoration.
14	4.3.8-168	9-12	<u>Comment on administrative draft:</u> Even if one pair breeds, fragmentation of habitat can cause edge effects such as exposure to cowbird parasitism, a major threat to both species. This should be discussed here. It is not clear why fragmentation would have a minimal effect if there are only a small number of individuals. If there is one breeding pair and fragmentation causes that nest to fail, this is not a minimal effect on a species that is considered extirpated from the Delta and is starting to return. This conclusion could be made if AMM 20 and/or MM BIO-75 adds a measure that nests will be monitored post construction where fragmentation has occurred, and appropriate actions will be taken to minimize resulting edge effect (e.g., cowbird control).	Partially addressed The cowbird problem was addressed and language suggested in comment on page 4.3.8-168, lines 24-28 below was added. We still suggest to delete the sentence that assumes a small number of occurrences would qualify the fragmentation impact as a low effect on the species for the reasons described in this comment (ie, impacting reestablished breeding in the Delta could prevent the species' range expansions and recovery). The implementation of AMMs, BIO-75 and adaptive management described thereafter would minimize the impacts.
15	4.3.8-	32-38	<u>Comment on administrative draft:</u> According to the valley/foothill	Partially addressed Language was updated per this

No.	Page	Line #	Comment	ICF Response
	168		riparian natural community impact analysis, Valley/foothill riparian will be restored primarily in CZ 4 and CZ 7 in the Cosumnes/Mokelumne and South Delta ROAs. The transmission lines to be installed along the tunnel alignment south of Lambert Road and from the Intermediate Forebay to RTM overlap the Cosumnes/Mokelumne ROA, and birds attracted by this restoration could be affected. The reasons discussed here do not make collision with transmission lines highly unlikely. The bird strike analysis for least Bell's vireo should be discussed instead and inferred for yellow warbler, as well as the effectiveness of diverters installed for greater sandhill crane.	comment, but states lack of occurrences as one of the reasons strikes are unlikely. The recent LBVI occurrence data imply LBVI could be present in the Delta but undetected. We suggest omitting this reasoning and instead focusing on each species' use of habitat, behavior, and diverters. It should also be noted that at least one study indicated yellow warbler and other species of vireos were found dead under powerlines (EPRI 2003), so strikes are not "highly unlikely". Strikes may be minimized by the birds' behaviors, and would be further minimized if powerline right-of-ways provide a buffer from the riparian habitat.
16	4.3.8-169	3-7	<u>Comment on administrative draft:</u> See comment 10	Partially addressed, see status for comment on page 4.3.8-168 lines 32-38.
San Joaquin kit fox and American badger				
17	4.3.8-295	25	<u>Comment on administrative draft:</u> Since the BDCP conservation strategy isn't part of Alternative 4A, this sentence should point to the corresponding EC(s).	Not addressed. ECs and RRPPs are described in this chapter. This section should not reference Chapter 3 of the draft BDCP. The ECs and RRPPs need to ensure the same goals of the conservation strategy.
18	4.3.8-296 297	35-36 1-8	<u>Comment on administrative draft:</u> In this paragraph, badgers need to be included in the discussion. Passive recreation could result in disturbance of San Joaquin kit foxes and American badgers at their den sites, particularly natal sites (Kirks 2015), and close contact with an aggressive badger could be a threat to human safety. Though disease from domestic dogs may not be an issue, we suggest updating AMM37 Recreation so that trails are buffered from active SJ kit fox and badger dens (BDCP Appendix 3.C, page 83, lines 1-3) to minimize disturbance and human encounters. We also suggest prohibiting rodent control when either species is present. Restrictions need to be discussed for both species to state that recreation effects will be minimal for both species.	Partially addressed Though the language here and ICF's response indicate a modification to AMM37, the modification does not show up in Appendix D to include badger dens.
19	4.3.8-297	15-18	<u>Comment on administrative draft:</u> AMMs 10 and 24 and MM BIO-162 are specific to construction activities and do not explicitly include measures for post-construction activities such as ongoing maintenance and operations. These need to be updated or not relied upon for minimization because the kit fox or the badger could	Partially addressed. <u>ICF response:</u> "The AMMS apply to all covered activities which includes construction, maintenance and operations, and restoration and recreation. No edits needed." This is described in BDCP public draft Appendix 3.C.1.

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			appear after construction is completed, particularly if attracted by restoration of habitat.	Section 4.1.23 states AMMs under Alternative 4A are consistent with the approach described in Appendix 3.C. We suggest updating BIO-162 to refer to all project activities. This may be a global comment for all MMs.
20	4.3.8-297	23-26	<u>Comment on administrative draft:</u> Suggestions in comments above should be considered for Substantive BDCP revisions in Appendix D to update AMMs 37, 10 and 24 and for an update to MM BIO-162 before these can be relied upon as measures that minimize mortality.	See status of comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18 above.
21	4.3.8-298	12-21	<u>Comment on administrative draft:</u> American badger needs to be included in these discussions as well. The modeled SJ kit fox habitat is also likely to represent suitable habitat for the badger. Lines 16-17 should not refer to an SJKF satellite population because there is no confirmed population in this area. This should be changed to existing suitable habitat in Contra Costa County. The mitigation in lines 19-21 would also benefit the badger.	Not addressed. <u>ICF response:</u> "some edits made, there is a population in Contra Costa County, and it would be considered a satellite."
22	4.3.8-298-299	41-44-1-4	<u>Comment on administrative draft:</u> This CEQA conclusion can only be made for both species if suggested changes in comments above are made.	See status on comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18 above.
23	4.3.8-299	5-12	<u>Comment on administrative draft:</u> As noted above, a description of post-construction monitoring, relocation, and avoidance need to be included. Avoiding an active den should be achieved with a buffer, as in AMM 24.	Partially addressed. Addressed by stating surveys will be concurrent with SJKF and BUOW surveys. However, the size of the buffer was not specified. AMM24 provides a buffer for known SJKF dens of 100 feet. We suggest using the same buffer for American badger and SJ kit fox, or allowing badger buffer distance to be determined by a qualified biologist.
24	4.3.8-299	19-22	<u>Comment on administrative draft:</u> Ground squirrel control would degrade the value of SJKF and badger habitat by reducing prey and burrows. This should be discussed here.	Partially addressed. Should be contingent on presence of individual SJKF or badger, rather than the presence of populations. Ground squirrels would help a population become established.
25	4.3.8-299	34-41	<u>Comment on administrative draft:</u> Same as comment on page 4.3.8-298, lines 41-44.	See status on comments on page 4.3.8-297, lines 1-8 and page 3.4.8-297, lines 15-18above.
26	4.3.8-300	N/A	<u>Comment on administrative draft:</u> There are no discussions on methylmercury exposure (badgers prey on birds as well as small mammals), fragmentation, or inundation. Even if these are not impacts, they should be discussed for consistency with other	Partially addressed. <u>ICF response:</u> "there are no effects on badger or fox from methylmercury." Although ICF's response indicates that there is no impact,

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			species' impacts analyses.	no discussion of potential impacts is included. Leaving methylmercury out of the indirect effects impact for these species is reasonable. However, several analyses of other species with no anticipated impacts from methylmercury are included. For example, the "Periodic Effects of Inundation" sections conclude that there will be no effect from methylmercury. We are suggesting consistency in this regard.
California tiger salamander				
27	4.3.8-95 96	43 21, 34	<u>Comment on administrative draft:</u> AMM 13 from the BDCP Appendix 3C will need to be updated to be consistent with language agreed upon by the TTT.	<u>ICF response:</u> "Information not available at this time". Please update as possible for the final draft.
28	4.3.8-97	30-32	<u>Comment on administrative draft:</u> There will need to be an updated version of AMM 13 as well, based on what was agreed upon in TTT.	<u>ICF response:</u> "Information not available at this time". Please update as possible for the final draft.
29	4.3.8-98	9	<u>Comment on administrative draft:</u> The USFWS Bay Area programmatic requires minimization of indirect effects from light, within a 1,000 ft buffer, which could result in increased likelihood of injury of mortality due to desiccation and predation. This needs to be discussed in more detail here and the minimization buffer needs to be added to AMM13.	<u>ICF response:</u> No permanent night lighting, minimal if any impact. We suggest restricting the use of all night lighting, permanent or temporary, which would illuminate adjacent suitable CTS habitat.
Loggerhead shrike				
30	4.3.8-334	10	<u>Comment on administrative draft:</u> Breeding shrikes have the status of species of special concern. Breeding shrikes also need shrubs and tall trees for perching and for nest placement, and are generally associated with riparian edge grasslands (Humple 2008) or grasslands/cultivated lands with trees and shrubs present. Impacts to this habitat are the most important to analyze over foraging habitat without the shrub and tree component.	Partially addressed <u>ICF response:</u> Can't re-run model but text was revised in accordance with this comment. It now states "Loggerhead shrike modeled habitat is overestimated as it does not differentiate between lands with or without associated nesting vegetation." We suggest adding "nesting and perching vegetation and structures" to this sentence. Other structures (fences, poles) can be used for perching. Though the model does not differentiate high quality from low quality as containing these components, adding this language shows that the impacts and compensation analysis is conservative because the model includes high-quality foraging habitat with and without perching structures. Low-value habitat doesn't

No.	Page	Line #	Comment	ICF Response
				<p>appear in Figure 12-42, and shouldn't be considered when analyzing impacts. Row/truck crops and vineyard conversion is considered a threat to the species (Humble 2008). Therefore, compensation of these impacts with high-quality grassland and riparian is also a conservative approach.</p>
31	4.3.8-265	1-2	<p><u>Comment on administrative draft:</u> Table 12-4A-50: Ensure impact analysis on high-value habitat includes riparian and riparian edge habitat. The analysis should be treated similarly to the Swainson's hawk and white-tailed kite.</p>	<p>Partially addressed <u>ICF response:</u> Can't model riparian edge habitat associated with grasslands, but the model is conservative as per status of comment on page 4.3.8-334, line 10. ICF also responded that the text would suggest riparian habitat sited near open areas would provide nesting opportunities, but this revision does not appear in the text.</p> <p>Another suggestion is to include RRPP RBR5, which would protect 227 acres of grasslands on landward sides of levees adjacent to restored floodplain as foraging habitat for RBR. This would also benefit the shrike; however, we hope the shrikes won't prey on the rabbits!</p>
32	4.3.8-264-267	30-31 28-29 41-45	<p><u>Comment on administrative draft:</u> Temporary impacts on grasslands with trees and shrubs available for nesting and on riparian habitat should also be restored after construction. Thus AMM10 should be included for this species.</p>	<p>Partially addressed A reference to AMM10 still needs to be added on page 4.3.8-265, line 12, and described on page 4.3.8-268, line 1, for habitat other than cultivated lands.</p>
33	4.3.8-267	30-31	<p><u>Comment on administrative draft:</u> Potential nesting shrubs and trees would also need to be mitigated at 2:1 if impacted, so the protected/restored habitat should contain an equivalent or higher number of shrubs or trees impacted. Riparian restoration and protection could be included here as mitigation if adjacent to high-quality foraging habitat. Tree or shrub replacement for Swainson's hawk or white-tailed kite could also apply to loggerhead shrike.</p>	<p>Partially addressed <u>ICF response:</u> "Can't model that impact for this draft. BUT have included riparian commitment and AMM18 commitment for trees to be adjacent to SWHA foraging habitat which would benefit LOSH."</p> <p>These benefits, as well as CL1, VFR1, and others that could be added (ECs 8 and 9, VP/ASW protection, RRPPs G8 and RBR5) do not meet the 2:1 mitigation for high-quality foraging habitat containing, or adjacent to, trees or shrubs. As a result, we recommend developing a mitigation measure for LOSH (which would also benefit other species) requiring that the 9,364 protected/restored grassland and suitable cultivated lands will be sited to have trees or shrubs</p>

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				present. SWHA habitat and RBR5 would cover about 7032 acres of this requirement.
34	4.3.8-268	16	<u>Comment on administrative draft:</u> See comments above for a stronger CEQA conclusion for nesting shrikes.	Partially addressed There is no mention of the importance of trees and shrubs in the CEQA conclusion. If the mitigation measure suggested for comment 48 is adopted, the CEQA conclusion would also reference that measure.
Mountain plover				
35	4.3.8-247	1-8	<u>Comment on administrative draft:</u> All protected cultivated lands or even protected/restored grasslands wouldn't necessarily benefit the mountain plover (change to "could" benefit mountain plover). Grasslands need to be managed to maintain a short vegetation height, and agricultural lands provide less suitable habitat than natural lands. Both would need good insect production with small amounts of vegetation so that plovers can seek invertebrates in cracks and crevices in the soil. Some cultivated land--including alfalfa, hay, and grain--would not be used if the plovers cannot access the soil (Hunting and Edson 2008). For the restoration and protection to be relied upon for a less than significant CEQA conclusion, the restored/protected lands would need to be managed to be suitable.	Partially addressed Addressed on page 247 and on page 249. EC 11 does not specifically manage habitat for ground foraging insectivores (heavily grazed or mowed, high invertebrate productivity), as stated in the analysis.
36	4.3.8-249	10-11	<u>Comment on administrative draft:</u> See comment 64. This is where the suitability of habitat impacted needs to be mitigated with equally suitable habitat (managed pasture or grassland, managed fallow ag land, or suitable agriculture) to meet the 2:1 requirement. Environmental Commitment 11 could accomplish part of this; however, it should be stated that the acres of grassland and cultivated lands protected or restored for mitigation will be selected and/or managed to meet suitability requirements for wintering mountain plover.	Partially addressed by EC 11. Restoration of grassland and protection of ASW/VP complex could also contribute to ECs meeting proposed mitigation ratios, in case there isn't enough suitable agriculture for this species. Relying on agricultural land assumes the protected habitat for SWHA and other species that are small mammal foragers are also suitable for insect foragers. However, SWHA foraging habitat could have higher vegetation cover than requirements of insect foragers. Mountain plover relies more on managed grassland, pastures, and harvested/fallowed fields than the majority of agricultural lands proposed for protection (Hunting and Edson 2008). This could be short of the proposed mitigation requirement for this species.
Black tern				

No.	Page	Line #	Comment	ICF Response
37	4.3.8-251	4-5	<u>Comment on administrative draft:</u> Black terns also nest in marshes or marsh complexes on emergent, floating, or aquatic vegetation (Shuford 2008). Central Valley black terns mostly breed in rice fields, but a few breed in emergent wetlands. Impacts to emergent wetlands should also be analyzed.	Partially addressed ICF response: "Can't change model for Recirculated Draft. Could add for the final EIR/EIS." This comment was addressed except for updating the model and analyzing potential impact to emergent wetland (marsh).
38	4.3.8-251	10-18	<u>Comment on administrative draft:</u> Same as comment on page 4.3.8-251, lines 4-5 above. Ensure emergent wetlands are included in the impact analysis.	Partially addressed See status of comment on page 4.3.8-251, lines 4-5 above.
39	4.3.8-251	13-18 20-25	<u>Comment on administrative draft:</u> The BSSC account infers that breeding black terns are extirpated from the Delta. This may be a strong analysis for a lack of direct and indirect effects on individual birds, but not necessarily on habitat. Furthermore, discussions on potential impacts should be warranted if the restoration of tidal or nontidal marsh attracts black terns to recolonize the Delta, since they regularly occur in the Sacramento Valley just north of the Yolo Bypass. The black tern may also occur occasionally in the Delta during migration or after breeding.	Noted but not addressed This comment should be addressed after the model is revised to assess impacts on emergent wetland. We suggest discussing potential impacts to migrating birds. Impacts to other migratory bird species assume individuals would evade disturbance impacts that could cause mortality. We suggest requiring surveys of any rice, flooded agricultural fields, or nontidal marsh wetlands within 200 feet of the footprint in case black terns start recolonizing the Delta during the project term. This requirement could be added along with a reference to MM BIO-75 to Impact BIO 129.
California horned lark and grasshopper sparrow				
40	4.3.8-252	8	<u>Comment on administrative draft:</u> Cultivated lands modeled should also include alfalfa.	Not addressed. ICF response: "Comment noted. Can't change model for Recirculated Draft. Could add for the final EIR/EIS."
41	4.3.8-252	14-15	<u>Comment on administrative draft:</u> Protection of grasslands could benefit these species if the grasslands are moderately open and managed to maintain low to medium vegetation height (Unitt 2008). Horned larks require short, sparse vegetation and may favor bare, dry ground. Both species are mostly ground foragers. Only a portion of protected cultivated lands will benefit these species.	Partially addressed. See comment status for mountain plover.
42	4.3.8-254	38-43	<u>Comment on administrative draft:</u> Suitability of habitat impacted needs to be mitigated with equally suitable habitat (managed pasture or grassland, managed fallow ag land, or suitable agriculture) to meet the 2:1 requirement. Environmental	Partially addressed per status of comments on page 4.3.8-247, lines 1-8 and page 4.3.8-252, lines 14-15 above. ICF stated that a mitigation measure cannot be developed to ensure the management of lands restored/protected

No.	Page	Line #	Comment	ICF Response
			Commitment 11 could accomplish part of this; however, it should be stated that the acres of grassland and cultivated lands protected or restored for mitigation will be selected and/or managed to meet suitability requirements for the species.	through ECs will meet proposed CEQA mitigation ratios for these grassland species. Horned larks have similar foraging requirements as mountain plovers. Grasshopper sparrows are also ground foragers that prefer dry, sparsely vegetated sites with open or bare ground for feeding, but also use medium height grasses and alfalfa. All of these birds are declining grassland species that may not have adapted as well to agriculture as Swainson's hawk. Therefore, relying mostly on protected agricultural land for their mitigation would not benefit the species as much as mitigating with heavily managed grassland.
Least bittern and white-faced ibis				
43	4.3.8- 259 260	28 8	Comment on administrative draft: Include AMM 37 here and in the CEQA conclusion.	Partially addressed. Not addressed on page 259, lines 19-23.

References Cited

EPRI (2003). Bird strike indicator/bird activity monitor and field assessment of avian fatalities. Prepared for the California Energy Commission, Public Interest Energy Research Program. Electric Power Research Institute (EPRI), Palo Alto, CA. Interim Report 1005385.

Heath, S. (2008). Yellow warbler (*Dendroica petechia*). In California bird species of special concern: studies of western birds no. 1. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Humple, D. (2008). Loggerhead shrike (*Lanius ludovicianus*) (mainland populations). In Bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Hunting, K. and L. Edson (2008). Mountain plover (*Charadrius montanus*). In California bird species of special concern. W. Shuford and T. Gardali (editors), Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA. pp. 180-186.

Kirks, S. (2015). American badger in Sonoma County - State of the badger 2014. Paula Lane Action Network, Petaluma, CA. Available: <http://www.paulalaneactionnetwork.org/StateOf.html>. Accessed: October 15, 2015.

Shuford, W. (2008). Black tern (*Chlidonias niger*). In Bird species of special concern. W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

Unitt, P. (2008). Grasshopper sparrow (*Ammodramus savannarum*). W. Shuford and T. Gardali (editors). Western Field Ornithologists and California Department of Fish and Game, Sacramento, CA.

USFWS (2005). News release: Songbird missing from Central Valley for 60 years reappears at San Joaquin River National Wildlife Refuge. US Fish and Wildlife Service (USFWS). Available: <http://www.fws.gov/news/ShowNews.cfm?ID=81C2E018-65BF-03E7-2C1A149D5B85E5ED>. Accessed: October 19, 2015.

**California Water Fix RDEIR/SDEIS Review
Comment Form**

Document: July 15, 2015 Public Draft—RDEIR/SDEIS Section 5

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	5-6	Table 5.2.1-1	The Lindsey Slough project has been completed. The table name and accompanying note state that these projects may apply toward meeting the conveyance project's Environmental Commitments, but many of these are described in preceding text as being a part of Cal EcoRestore, suggesting they would not be means to meet Alt. 4A's Environmental Commitments. Please clarify.	
2	5-6	1-6	The text states that concurrent project effects will not occur under the non-HCP alternatives because these new alternatives do not contain the CMs. However, the preceding text and following table identify projects that may occur under Cal EcoRestore during the construction period for the conveyance. Modeling assumes that in the near term 25,000 acres of tidal restoration will occur, as well as Yolo improvements. Please clarify or confirm how these projects are considered as potential cumulative projects for the non-HCP alternatives.	
3	5-129	8-16	<p>CDFW staff made substantial comments on Section 4.3.8 (Alt 4A, Terrestrial Biological Resources) regarding the adequacy of proposed mitigation measures in offsetting impacts to special-status species as a result of water conveyance facility construction. In some cases the proposed mitigation acreages do not meet the stated CEQA mitigation ratios commonly used to offset impacts to individual species. In other cases, the same mitigation action (for example riparian habitat restoration) is proposed as a mitigation measure for multiple species with a wide range of specific habitat requirements. These species requirements are, in some cases, so disparate that one project or mitigation commitment cannot be tailored to both species (for example least Bell's vireo and special-status bats).</p> <p>CDFW staff reiterates these comments again in the context of Section 5, Cumulative Impacts.</p>	

			<p>When taken together, across all cumulative impacts to special status species in the Delta, even a slight difference between standard mitigation acreage requirements under CEQA and those proposed for this project, or partial inadequacy in the ability of proposed mitigation to meet species-specific requirements, are likely to result in adverse impacts under the preferred alternative 4A.</p>	
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**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft—RDEIR/SDEIS Appendix A Section 8

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	8-33	28	2015 WDR for discharges to Mud Slough have recently been adopted (CVRWQCB 2015).	
2	8-34	13, 37	White sturgeon selenium tissue data have been collected and reported from the SF Bay and Delta recently (Linares-Casanave, Linville et al. 2014). The fish selenium concentrations are at levels that have been shown to cause reproductive toxicity.	
3	8-54		Total mercury concentrations in many Central Valley water bodies and Delta outflow have been to found to have statistically significant positive relationships with flow. If the project alternatives have the ability to adjust flow rates into or out of the Delta, then the analyses should include this type of relationship to estimate mercury concentrations (and other constituents with flow-dependent concentrations) to calculate mass-balances. The assumption that concentrations are conservative and independent of flow rates may not present the true magnitude of impacts caused by alternatives that adjust flow magnitude (Louie, Foe et al. 2008, David, McKee et al. 2009, Wood, Morris et al. 2010).	
4	8-58	33-	Research in the last 10 years has shown that fish are more sensitive to mercury toxicity than previously thought (Beckvar, Dillon et al. 2005, Dillon, Beckvar et al. 2010, Sandheinrich, Bhavsar et al. 2011). It is estimated that fish tissue methylmercury concentrations need to be 0.2 mg/kg (whole body) to be protective of fish health. In addition, the most sensitive endpoint of mercury toxicity is likely to eggs and early-life stages of fish through maternal transfer (<0.02 mg/kg). Current water quality objectives and criteria were only developed to protect humans and other wildlife consumers of fish (e.g., Delta Methylmercury TMDL, SF Bay Mercury TMDL, and CTR). The current analyses should include an evaluation of the impacts of alternatives on mercury toxicity to fish using 0.2 mg/kg (0.02 mg/kg for ELS) or equivalent as a benchmark. As well, the "Existing Surface Water Quality" section should include mercury toxicity and risks to fish.	
5	8-87	11-12	The text states: "The later estimation is recognized as the most reliable calculation of mercury	

			exported from the Delta to date (SFBRWQCB 2006)” However, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) recognizes David, McKee et al. (2009) as the most reliable calculation. Please revise this citation.	
6	8-87	21-23	The text states: “The Central Valley Water Board has targeted the 110 kg/year total mercury load reduction in its planned implementation of the Delta Methylmercury TMDL (SFBRWQCB 2006).” Wrong reference. Instead cite CVRWQCB (2010).	
7	8-98	10	“Low Toxicity Thresholds” is not one of the 3 categories of exceedance threshold categories said to be evaluated earlier in the paragraph.	
8	8-98	18	The category described previously was “Toxicity Threshold Exceedance” not “Toxicity Level Exceedance”.	
9	8-98	19-23	None of the figures display the Toxicity Threshold Exceedance Quotients. Figure 8-65 is monthly average flow.	
10	8-105	42-44	Delta methylmercury export load estimates were developed from monitoring that was conducted from approximately 2000-2006, not only one year of data (Louie, Foe et al. 2008).	
11	8-247	4-31	The State Water Board’s Statewide Mercury Control Program for Reservoirs has determined that the magnitude of reservoir level fluctuations has been found to be positively correlated to reservoir fish tissue methylmercury concentrations (SWRCB 2015). If the project operations result in increasing the fluctuations of upstream reservoirs through re-operations, etc., then the project may impact reservoir fish methylmercury concentrations. The current environmental evaluation has not assessed this impact.	
12	8-248	29	Exceedance quotients comparisons should include an evaluation of fish protection benchmarks for mercury (e.g., 0.2 mg/kg adults and 0.02 mg/kg ELS). The evaluation should include assessments for sensitive fish species.	
13	8-249	22	Many major rivers in the Sacramento-San Joaquin River Delta watersheds have significant relationships between flow and total mercury concentrations. See Comment 3.	
14	8-283	29	Sturgeon are biological. The project is predicted to cause hard to green sturgeon, an ESA listed species. Additionally, since sturgeon are indicator species, this analysis indicates that there may be other organisms that feed from the benthic food web (e.g., splittail) which might be at high risk. If it is predicted that sturgeon selenium concentrations may exceed benchmarks and thresholds, then it is possible that	

			<p>these other benthic feeders may be at risk too. Selenium tends to accumulate to a much greater extent in sensitive tissues (e.g., liver, gonads, kidneys) than in muscle, and selenium toxicity has been shown to increase non-linearly. Increasing selenium concentrations from below benchmark thresholds to above thresholds is significant. Furthermore, increasing whole-body concentrations would result in multiple-fold increases in other sensitive tissues, which may have significant effects to the organisms or offspring.</p> <p>It is incorrect to conclude that there are no predicted exceedances of biological effects if Alternatives 4 and 4A would cause an EQ of 1.1 for sturgeon and exceed the lower benchmark. This comment also applies to Alternative 4A water quality analyses and CEQA conclusions.</p>	
15	8-309	41	Similar to comment 11, Delta export loads were estimated from data collected between 2000-2006 (Louie, Foe et al. 2008).	

Literature Cited

Beckvar, N., T. Dillon and L. Read (2005). Approaches for linking whole-body fish tissue residues of mercury or DDT to biological effects thresholds. *Environmental Toxicology and Chemistry*. **24**: 2094-2105.

CVRWQCB (2015). Grassland bypass project [Internet]. Central Valley Regional Water Quality Control Board (CVRWQCB), Rancho Cordova, CA. Available: http://www.waterboards.ca.gov/centralvalley/water_issues/grassland_bypass/. Accessed: October 19, 2015.

David, N., L. McKee, F. Black, A. Flegal, C. Conaway, D. Schoellhamer and N. Ganju (2009). Mercury concentrations and loads in a large river system tributary to San Francisco Bay, California, USA. *Environmental Toxicology and Chemistry*. **20**: 2091-2100.

Dillon, T., N. Beckvar and J. Kern (2010). Residue-based mercury dose-response in fish: An analysis using lethality-equivalent test endpoints. *Environmental Toxicology and Chemistry*. **11**: 2559-2565.

Linares-Casanave, J., R. Linville, J. Van Eenennaam, J. Muguet and S. Doroshov (2014). Selenium tissue burden compartmentalization in resident white sturgeon (*Acipenser transmontanus*) of the San Francisco Bay Delta Estuary. *Environmental Toxicology and Chemistry*. **9999**: 1-9.

Louie, S., C. Foe and D. Bosworth (2008). Mercury and suspended sediment concentrations and loads in the Central Valley and freshwater Delta. Prepared for the CALFED Bay-Delta Program. Central Valley Regional Water Quality Control Board, Rancho Cordova, CA. Available: <http://mercury.miml.calstate.edu/reports/reports/>. Final Report.

Sandheinrich, M., S. Bhavsar, R. Bodaly, P. Drevnick and E. Paul (2011). Ecological risk of methylmercury to piscivorous fish of the Great Lakes region. *Ecotoxicology*. **20**: 1577-1587.

SWRCB (2015). Statewide mercury program: Addressing mercury in California's waters [Internet]. State Water Resources Control Board (SWRCB), Sacramento, CA. Available: http://www.waterboards.ca.gov/water_issues/programs/mercury/. Accessed: October 19, 2015.

Wood, M., P. Morris, J. Cooke and S. Louie (2010). Amendments to the water quality control plan for the Sacramento River and San Joaquin River Basins for the control of methylmercury and inorganic mercury in the Sacramento San-Joaquin Delta Estuary. Central Valley Regional Water Quality Control Board, Rancho Cordova, CA. Staff Report.

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft- RDEIR/SDEIS Sections 3 and 4, Chapter 11, and Appendix D, Fish and Aquatic Resources

Comment Source: *California Department of Fish & Wildlife*
Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
	General		<p>The process between modeling or other analysis and NEPA Effects/CEQA Conclusions determinations needs to be described more clearly. Generally the analysis shows differences between NAA/Existing Conditions and Proposed Project for habitat/physical values such as flow or temperature based on 2010 modeling for scenarios H3 and H4. These values are also frequently presented in mean or average values over long periods of time.</p> <p>What is not clear is how these modeled physical changes are translated into biological effects and subsequently how these biological effects are deemed to be significant/adverse or not in the NEPA Effects/CEQA Conclusions.</p> <p>It should be made clear that these determinations are often based on professional experience rather than a rigorous quantitative process that translates modeled physical effects into biological effects. This was acknowledged in the BOR's recent DEIS for the Coordinated Long Term Operations of the CVP/SWP. In order to clarify how these decisions are made more effort could be placed into describing the rationale behind the decision.</p> <p>It is also not clear what species population estimates or species abundance indexes these modeled effects are applied to in assessing biological effects and NEPA Effects/CEQA Conclusions. Species population indices and abundance estimates are trending</p>	

			<p>down both long term, under current conditions, and are likely to continue to trend down into the future due to climate change, increased demand, and sea level rise (<i>see attached Supplemental Document containing a summary of CEQA conclusions</i>).</p> <p>Please note that there are numerous instances where the NEPA effects (no adverse impact) are utilized over CEQA conclusions (which show significant impact) because NAA separates non project impacts (climate change, sea level rise, increased demand) from project impacts. Fish populations in the wild; however, are not are subject to NEPA/CEQA distinctions. Rather they are subject to the conditions and stressors that they experience and populations will respond accordingly between Existing Conditions and NAA.</p> <p>The question is then whether the translation between modeled physical effects, biologically meaningful effects, and subsequently NEPA/CEQA determinations is made based on knowledge of current fish populations or are these decisions made based on the effect project operations may have on future populations at the NAA baseline in light of degrading environmental conditions. This is an important distinction because smaller magnitudes of change in physical habitat attributes may have a greater effect on aquatic species with critically low population abundances in the future.</p>	
	<p>3-7</p>	<p>29-32</p>	<p><i>“Refer to Section 4.3.7, Fish and Aquatic Resources, Impacts AQUA-1, AQUA-19, AQUA-37, AQUA-55, AQUA-73, AQUA-91, AQUA-109, AQUA-127, AQUA-145, AQUA-163, AQUA-181, and AQUA-199 for the analysis of Alternative 4A. These construction-related impacts would be identical for Alternative 4 because the proposed physical water conveyance facilities are the same for both alternatives.”</i></p> <p>The text written here creates a circular</p>	

			path the reader must follow. AQUA-109 for example, refers the reader back to Alternative 4 (presumably of the Public Draft EIR/EIS?) for a description of impacts. This creates confusion and does not seem to align with the text written here.	
	4.2-1	16-18	This sentence states that the NAA_ELT period assumes a time period of approximately 15 years following project approval, but the footnote on this page suggests that the ELT is modeled at 2025, which will be significantly shorter than 15 years. Please update the language for consistency and provide an explanation in the text for this discrepancy.	
	4.2-51	31-36	RPA Action 1.7 will provide improved connectivity and passage for SRC, as well as other salmon runs. This information should be updated as appropriate to this discussion. However, it is unclear why specific reference to RPA 1.7 is called out here when many of the RPAs are aimed at increasing abundances of listed fishes. If the intent is to make a connection between adult passage resulting in increased success of spawning and population abundance, which could then lead to increased entrainment, the discussion could use additional clarification.	
	4.2-54	12-14	This CEQA conclusion overstates the number of species that will likely have rearing benefits from RPA Action 1.6.1. The extent by which RPA Action 1.6.1 will have rearing benefits for steelhead is unclear and rearing benefits to green and white sturgeon are even more uncertain. In addition, splittail may have some rearing benefits, but the benefits of RPA Action 1.6.1 to splittail are predominantly in regards to spawning habitat, and should therefore be included in the Water Ops Effects on Spawning in the above section.	
	4.2-54	39-43	It is unclear whether this section is discussing impacts on migration habitat for juveniles or for adults—we assume it is referring to juvenile migration. While RPA Action 1.7 will likely have benefits for outmigrating juveniles, the RPA is targeting adult passage. Therefore, if this	

			<p>section is about juvenile migration habitat (which makes the most sense), then it may not be appropriate to discuss the potential indirect benefits from RPA Action I.7 with any certainty. It would be more appropriate to call out RPA Action I.6.1 benefits here, since that RPA targets juveniles, and discuss the benefits of the Yolo Bypass as a migratory pathway as compared to the Sacramento River.</p> <p>In addition, the extent in which there are migration habitat benefits to splittail from this RPA are uncertain; the benefits from floodplain for this species are largely spawning and some level of rearing.</p>	
	4.2-57	15	The term "Important Farmland" should be defined and reference or footnoted.	
	4.2-57	23	Are "existing plans and programs" also referring to implementation of the BiOp RPAs? It would be useful to include a little more detail on some examples of which RPAs will be converting agricultural lands, including e.g. RPA I.6.1, upon which this CEQA conclusion is being drawn, especially given that it is a "significant" conclusion.	
	4.3.4-24	27-30	The language here seems to suggest that modeled electrical conductivity for Alt 4A is based on results using assumptions from Alt 4. This is particularly concerning as Alt 4 has a substantial amount of tidal restoration and a compliance point at Threemile slough which is further upstream than the compliance point for Alt 4A (Emmaton). If this is the case, then the conclusions for EC under Alt 4A are likely muted and reflect conditions which are substantially different than what is likely to occur within the Plan Area. A discussion of the difference, or reasons to why there is no difference, should be included.	
	4.3.4-30	16-19	<i>"The implementation of mitigation actions shall be focused on avoiding or minimizing those incremental effects attributable to implementation of Alternative 4A operations only. Mitigation actions to avoid or minimize the incremental EC effects attributable to climate change/sea level rise are not</i>	

			<p><i>required because these changed conditions would occur with or without implementation of Alternative 4A."</i></p> <p>Operations of the SWP and CVP (including north Delta Diversions) will continue to need to meet D-1641 compliance standards even in the face of sea level rise.</p> <p>We have understood that operations will continue to manage for D-1641 compliance standards by adjusting diversions and reservoir releases as part of routine operations. Thus it is unclear how this mitigation measure would be implemented to the impacts would be less-than-significant.</p>	
	4.3.4-30	24-36	CALSIM II, as described in 8.3.1.1, places EC compliance at Emmaton at the highest priority, and either achieves the objective, or decides that there is no feasible way to meet it. Please provide additional information on a mitigation measure such as WQ-11a will be able to have a meaningful affect at avoiding and minimizing impacts beyond what CALSIM II predicts, as the model should already incorporate management of diversions into its Artificial Neural Network.	
5	4.3.7-33	18	"AQUa-1b" should be "AQUA-1b".	
6	4.3.7-33	33	Here and on Line 37, the text appears to mistakenly refer to Delta Smelt, rather than Longfin Smelt.	
7	4.3.7-34	4	Here and at Line 8 there appear to be mistaken references to Delta Smelt, rather than Longfin Smelt.	
8	4.3.7-35	19	The meaning of sentence here would be clearer if the word "losses" was deleted after the word "entrainment".	
9	4.3.7-36	29	For added clarity consider finishing the sentence here with the phrase "...Incidental Take Permit issued by DFW."	
10	4.3.7-36	29	The sentence beginning here with "However", in combination with subsequent sentences, reads awkwardly and contains some redundancy. Consider revising this section of text to read something like: "However, at this	

			<p>time, the best predictor of Longfin Smelt abundance is the statistical relationship between January through June X2 and Fall recruitment developed by Kimmerer et al. (2009), indicating that lower (farther downstream) X2 is associated with greater abundance. For the purposes of this impact assessment, the Kimmerer et al. (2009) relationship was used to determine how project-related changes in winter-spring X2 position might influence Longfin Smelt Fall recruitment. Consistent with the adaptive management and monitoring program described in Section 4.1, Alternative 4A would implement investigations to improve understanding of factors affecting Longfin Smelt abundance and better inform future project operations.”</p>	
11	4.3.7-38	12	It appears “has” should instead be “have”.	
12	4.3.7-39	Table 11-4A-8	<p>Footnote “1” in the table hints at something important relative to project impacts on Longfin Smelt. This species has declined severely and it is likely that CVP/SWP attenuation of winter-spring flows has contributed to this trend, and that the species can’t sustain itself under existing operations. The effect of existing operations can be assessed using the X2/abundance relationship developed by Kimmerer et al. (2009), and such an assessment should be incorporated into cumulative effects discussions. The sustainability risk posed by existing operations argue strongly for avoidance of even small negative effects associated with the proposed project, like those associated with Alternative 4A(H3).</p>	
	4.3.7-44	16	<p>General Comment – Winter Run Chinook Salmon</p> <p>CDFW will continue to participate in CWF development of water operations criteria and analysis for Winter-run effects. This is currently happening under the development of the Section 7 BA, with an expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should</p>	

			the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS.	
4.3.7-50	24 and 36		Suggest deleting "as is currently being done" here and in the next paragraph.	
4.3.7-60	44		It is unclear how the author can come to this conclusion without a discussion of existing operations and RPA actions intended to address significant impacts associated with the existing project operations (NAA_ELT). The BiOps found significant impacts under the NAA_ELT and require RPAs to avoid jeopardy. This project summarizes that it would then have additional impacts when compared to the NAA_ELT, yet concludes that no mitigation is required.	
4.3.7-77	20		General Comment – Spring Run Chinook salmon CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Spring Run Chinook salmon effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of that effort indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS.	
4.3.7-124	28		General Comment – Fall/Late Fall Run Chinook salmon CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Fall/Late Fall Run Chinook salmon effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS. Fall/Late Fall Run Chinook salmon will not be included in the 2081 permit and	

			potential impacts must be mitigated through CEQA.	
	4.3.7-124		<p>CDFW will continue to participate in CWF development of water operations criteria and BA/BO and 2081 analysis for Winter-run effects with the expectation that the Final EIR/EIS will be consistent with the results and determinations of those efforts. Should the results of those efforts indicate that mitigation measures are necessary under CEQA, CDFW's expectation is that mitigation measures identified will be incorporated into the Final EIR/EIS.</p> <p>Steelhead will not be included in the 2081 permit and potential impacts must be mitigated through CEQA.</p>	
	4.3.7-124	37	In section 4.3.7, the potential effects on fall run/late fall run are stated to be the same as those described for Alternative 4, Impact AQUA-73. In section 3.3.8, it refers to section 4.3.7 for analysis of alternative 4A. Please include summary analysis of the effects of construction of water conveyance facilities on chinook salmon (fall/late fall run ESU) instead of referring to section 3.3.8 which then refers the reader back to section 4.3.7.	
	4.3.7-125	1	Chapter 11 of the Public Draft EIR/EIS states that the dual criteria for impact pile driving are 206 dB for the peak sound pressure level and 187 dB cumulative for fish larger than 2 grams. In the example of cofferdam construction, based on an attenuation rate of 4.5 dB per doubling of distance, cumulative exposures to pile driving sounds could result in injury of fish up to 858 meters from the source piles. This conclusion and potential for behavioral effects on fish should be included in the NEPA and CEQA effects as well.	
	4.3.7-135	5	A 17% or 19% increase in egg mortality for any given year is significant; this is especially true if that year type occurs over a string of years. That said, both the relative and the absolute value show an increase in egg mortality, which is not consistent with the conclusion that <i>"...this increase would not cause an overall effect to fall-run Chinook salmon"</i> .	

			Additional explanation of how the author came to this conclusion should be included.
	4.3.7-159	25	Confirm timing of species life stages analyzed for effects.
	4.3.7-168	12	<p>"Flows in the Sacramento River upstream of Red Bluff were examined for juvenile fall-run migrants during February through May."</p> <p>Confirm timing of species life stages analyzed for effects. Juvenile emigration at Red Bluff occurs between December through April (Martin et al. 2001)</p>
	4.3.7-168	16	Confirm timing of species life stages of temperature analysis effects determination.
	4.3.7-183	1	<p><i>"Mitigation Measure AQUA-78d: Slightly adjust the timing and magnitude of Shasta, Folsom, and/or Oroville Reservoir releases, within all existing regulations and requirements, to ameliorate changes in instream flows that would cause an adverse effect to fall-run Chinook salmon."</i></p> <p>The discussion needs to summarize which months and factors are driving these impacts, such as elevated temperatures or reduced flows in which months and identify in which ways reservoir releases will alleviate these impacts.</p> <p>The term 'slightly' should be more clearly defined as it is vague and subject to interpretation; alternatively the term could be deleted.</p>
	4.3.7-198, 199	26-28, 1-21	<p>We assume spring-run is suitable for use as a proxy for juvenile steelhead. However, the number utilized for spring run is based on a bioenergetics model. Therefore, the percentage of population impacted given for spring run would not be valid for steelhead unless the population sizes are the same.</p> <p>Additionally, the CEQA conclusions in this section (and potentially others) should clearly discuss the interaction of the NDD and SDD impacts as they relate to predation. This would include</p>

			clarification of uncertainties associated with NDD impacts and the commitment to and implementation of performance standards.
	4.3.7-211	14	Water year types must be treated independently in order to fully evaluate project effects and therefore cannot be combined to summarize the relative difference between mean flows. We recognize the challenges of presenting large quantities of data but we also recognize the need for extremes to be presented in addition to the means in order to fully evaluate the impacts.
	4.3.7-211	34	<p>“The effect of H3_ELT on mean flow and water temperature in the American River would be negligible although increased exceedances of the 56°F temperature threshold indicate a negative effect to steelhead spawning and egg incubation conditions.”</p> <p>This sentence seems contradictory in that the effect is stated as negligible, yet exceedances indicate a negative effect to steelhead spawning and egg incubation conditions. 56 degrees is not an optimal egg incubation temperature. It is sub-optimal therefore any excursions past 56 are detrimental to year classes on a population level.</p> <p>Richter and Kolmes (2005) concluded that egg mortality increased as incubation temperatures exceeded 10°C (50°F) and substantial mortality may occur when temperatures exceed 13.5°C to 14.5°C (56.3°F to 58.1°F). Based on experience at hatcheries in the Central Valley, optimal incubation temperatures appear to be in the 7°C to 10°C (44.6°F to 50°F) range (Myrick and Cech 2004). California’s steelhead management plan (McEwan and Jackson 1996) suggests a slightly higher temperature range (from 9°C to 11°C [48.2°F to 51.8°F]).</p>
	4.3.7-212	11	“Flows in the Mokelumne River at the Delta were examined during the January through April steelhead spawning and egg incubation period (Appendix 11C, <i>CALSIM II Model Results utilized in the Fish Analysis</i>). Mean flows under H3_ELT

			<p>throughout this period would be similar to flows under Existing Conditions, with minor exceptions.”</p> <p>“Mean flows in the Sacramento River at Keswick and upstream of Red Bluff during January through April under H4_ELT would generally be similar to flows under Existing Conditions, with minor exceptions.”</p> <p>Please explain these “minor exceptions.”</p>	
	4.3.7-212	31	<p>Mean flows below Thermalito Afterbay under H4_ELT would be 36% lower than existing conditions during January and February and up to 509% greater during April, yet it is stated that there would be no differences in mean water temperature for any months or water year types at that location. This conclusion needs more clarification on why the lesser or greater flows with the accompaniment of lower storage in Oroville will have no effect on temperature.</p>	
	4.3.7-253	34	<p>“As noted for other salmonids such as winter-run Chinook salmon, similar or slightly lower survival than for Existing Conditions based on the water conveyance facilities operations would be offset by the inclusion of bypass flow criteria, real-time operational adjustments, <i>Environmental Commitment 6 Channel Margin Enhancement, Environmental Commitment 15 Localized Reduction of Predatory Fishes, and Environmental Commitment 16 Nonphysical Barriers.</i> Overall, it is concluded that the impact to steelhead would be less than significant and no mitigation would be required.”</p> <p>An impact of an operation cannot be offset with the same operation. Please replace “offset” with “minimized”. In regard to EC 15 please refer to Appendix D. Appendix D states that these projects would be implemented as experimental/pilot efforts because these efforts may not result in any measurable benefit.</p>	

			The less significant conclusion is not supported, given the above discussion and the previous paragraph (lines 27-29) that states "Near-field effects of Alternative 4A NDD on Sacramento River steelhead related to impingement and predation associated with the intake structures could result in negative effects on juvenile migrating steelhead, although there is high uncertainty regarding overall effects." Please provide further detail (e.g. performance standard and criteria) on how the project actions will ensure impacts are less than significant.	
4.3.7-258	32-34		It is problematic to refer to Delta smelt rationales when describing impacts of construction related activities for other species. The rationale for Delta smelt explains that because they are not likely to be in the area, or may have a few individuals present during the construction window, that impacts are essentially not significant. This will not be the case with juvenile splittail, as they will be present during the construction window.	
4.3.7-331	28		There is no assessment of entrainment at the North Delta Facilities in this section for Pacific Lamprey.	
4.3.7-331	38		The statement regarding entrainment under Alternative 4A not being adverse on lamprey is unsubstantiated. It is widely known that the effects of entrainment are still unknown on lamprey (Goodman and Reid 2012). While analysis conducted for 4A shows a reduction of entrainment, the remaining level of entrainment is not presented and may have a significant effect on lamprey populations.	
4.3.7-332	20-23		As mentioned previously, due to the uncertainty surrounding entrainment effects on Pacific Lamprey, it is inappropriate to assume that impacts related to water operations are less than significant simply because operations under 4A are expected to reduce entrainment. Until the effects of entrainment are better understood at the population level for Pacific Lamprey, there cannot be any certainty to impacts related to entrainment.	

4.3.7-352	17	There is no assessment of entrainment at the North Delta Facilities in this section for River Lamprey.
4.3.7-352	34-36	The same comments mentioned previously related to Pacific Lamprey also apply here for River Lamprey.
4.3.7-372-373		There are potentially significant but unpredictable landscape level trophic and fish population dynamic effects that could result from large scale larval entrainment of striped bass and potentially American shad. The increase in larval striped bass entrainment is estimated to be 220%.
4.3.7-306	22	The assessment of NPB effects provided here is highly speculative. If the NPB did impede adult sturgeon migration this could have a substantial impact on Green and White sturgeon populations. Given the risks, assessing NPB effects on adult sturgeon migration, particularly at the reduced CWF river flows, should be a high priority element of the CWF targeted research and monitoring program.
4.3.7-309	33-38	The paragraph beginning here discusses temperature effects in terms of percentages, and equates changes of less than 5% as being no difference. Given that 5% of 60 degrees F is 3 degrees, and this level of change could be consequential for some species and lifestages, the "5%" reference is a poor descriptor of change and benchmark for concern. Also, if the "big picture" change could be characterized generally warmer or colder, it would be helpful information.
4.3.7-311	311, Table 11-4A-108	This table shows substantial effects, particularly in May and June. It would be useful if an explanation was provided for the underlying causes (and the relative contribution of the causes) for the effects. It would be particularly useful to know this for the NAA_ELT vs. H3_ELT comparison, which has climate change factored out.
4.3.7-315	Table 11-4A-111	The substantial effects shown in the table for the Existing Conditions vs. H4_ELT comparison illustrate an important point. The point is that ELT conditions are predicted to be

			substantially degraded from today's conditions, and sturgeon and other species populations substantially diminished as a result. The degraded ELT conditions are in addition to the greatly degraded conditions of today, much of which is attributable to ongoing effects of the CVP and SWP. This circumstance is important context for assessing the importance of predicted NAA_ELT vs. H3&4_ELT effects.	
	4.3.7-323	4	The discussion beginning here regarding flow exceedances references AFRP recommendations. It is important to note that the AFRP was developed outside the context of the CWF. To the extent flows below the NDDs contribute to sturgeon production, the CWF decouples outflow from earlier outflow/production relationships.	
	4.3.7-325	16	Changes in through-Delta flows due to the CWF are briefly mentioned here. Reductions in flows between the NDDs and the Sacramento-San Joaquin river confluence is the most substantial CWF environmental effect sturgeon will be exposed to. Chapter 4 and/or Chapter 11 should present modelling results for, and discuss, this specific physical effect. At present the specific influence of flow in this river reach on sturgeon production is not known, but given the magnitude of the physical effect, the effect on sturgeon production should be a major focus of the "targeted research and monitoring" mentioned at Line 24. The effect of flow in this reach on spawning migration initiation and passage, the effect of flow on juvenile survival through the reach should be high priority research and monitoring program elements.	
	4.3.7-375	2-3	This is inconsistent with 4.3.4-26 lines 39-41 and 4.3.4-29 lines 29-30 which indicate potential adverse indirect effects on striped bass spawning in the Delta as opposed to river conditions. Please include similar discussion here.	
	4.3.7-375	6	It is unclear why flow and temperature on the Trinity River were evaluated for effects on striped bass. Generally, proofread for consistency for the Trinity	

			River to check to see if analysis is being presented for species that are not present in the Trinity River such as the Sacramento San Joaquin roach. This is confusing to the reader.	
	4.3.7-403	33	The CEQA conclusion for hardhead incorrectly refers to roach. Please proofread and ensure the analysis is correct as to roach.	
	4.3.7-426	38	Beginning here, the document presents a summary of the NEPA and CEQA effects of Impact AQUA-203 ("rearing") on the California Bay Shrimp (<i>Crangon franciscorum</i>). The conclusions are based on modelling results presented in Appendix A, Chapter 11, Table 11-mult-13 from application of Kimmerer (2009) findings regarding the relationship between X2/flow on CBS abundance. Although the model application approach is reasonable, conclusions in the NEPA Effects "not adverse", and the CEQA Effects "less than significant", appear arbitrary and poorly supported.	
	4.3.7-437	4	The document asserts that the differences in abundance between NAA_ELT and the Alternative 4A scenarios are "small", and thus are insubstantial. These assertions raise important questions about the biological effects of the allegedly small changes, and detailed differences in results between water year types and between scenarios 4A(H3) and 4A(H4). The available scientific information suggests that the abundance of CBS in the estuary has already been substantially reduced by the CVP and SWP through reductions in winter-spring flows, particularly in drier years. Thus the predicted incremental losses in abundance (ranging from 2% to 7% attributable 4A(H3) operations should be viewed as adverse and an unacceptable effect on a highly impaired population. The same "Kimmerer 2009" approach could and should be used to describe the environmental baseline for CVP/SWP operations on CBS abundance. The differences in abundances predicted for H3 and H4 are quite substantial (averaging 8%, and ranging from 3 to	

			<p>18%), emphasizing the potential benefit of protecting winter-spring flows, which H3 fails to do.</p> <p>A close examination of Table 11-mult-13 also reveals important Year Type-related scenario effect differences. It is clear that the largest negative consequences (-7%) of 4A(H3) operations relative to NAA_ELT operations occur in years designated as Below Normal or Dry. This is an important observation, because years of this type are years when the population is already heavily impacted by low flows due to low precipitation and CVP/SWP operations.</p> <p>Given the importance of the CBS as a food source for other severely impaired key species (e.g. White Sturgeon), reductions in CBS biomass of the magnitude suggested by the modelling results in Table 11-mult-13 for proposed 4A(H3) operations should be viewed as a significant and adverse potential impact of the proposed project.</p>	
	11-53; 11-61		Table 11-8 and 11-11 do not match for timing of fall run within the project area. Table 11-11 only shows fall run juveniles in May, but should also include the month of June as in Table 8.	
	11-141	22	The word "variable" should be plural.	
	11-141	29	"Murphy et al. 2011" is cited here and perhaps elsewhere, but not listed in the Chapter references.	
	Appendix D	General	<p>It is not clear in this section which elements apply to HCP/NCCP Alternatives and which elements apply (or do not apply) to Alternative 4A. This section should clearly delineate for the reader which elements are included in 4A and which elements are not. Examples are:</p> <ol style="list-style-type: none"> 1) Biological objectives in general 2) Inclusion of Fremont Weir operations in RTO as CM2 is a separate project under 4A. Integration of Yolo Bypass in general as a separate program under 4A 3) Adaptive Management and Adaptive Management Fund 4) Implementation Office 5) Environmental Flow Program 	

		<p>6) Monitoring and Research – Table 3.6-4 Table 3.6-5 Table 3.6.6 etc. include biological objectives explain how these would apply not apply to 4A. How would they be modified for 4A. 7) Annual Delta Water Operations Plan 8) Annual Progress Report 9) Annual Delta Water Operations Report 10) Five-Year Comprehensive Review/5 Year Implementation Plan 11) Twenty-five year Climate Change Comprehensive Review 12) Suspension or Revocation of the State Permit 13) Authorized Entity Group 14) Permit Oversight Group 15) Evaluating and determining whether the diversion structures are achieving performance standards for covered fishes over the course of operations</p> <p>To the extent that criteria on the Conveyance operations (e.g. see page D.3-19) and Environmental Commitments <i>are</i> carried forward into the 4A project description, please more clearly, comprehensively and consistently highlight in Section 4.1.2, since those are components of the Project Description and as currently formatted they are difficult to discover and parse out from the modifications to Alternative 4.</p>	
	<p>D.1-1</p>	<p>As an example of our general comment above on Appendix D, please clarify the alternatives to which Section D.1-1 applies. Projects that are referenced in this section that would serve as mitigation for other projects (for example, to meet mitigation requirements under the 2008/2009 biological opinions), or have funding-based restrictions against their use as mitigation, should not be proposed as mitigation for Alternative 4A. In addition, please note that Proposition 1 funds cannot be used to pay the costs of mitigation of Alternative 4A.</p> <p>Also, please note that in the development of BDCP, decisions had yet to be made about the appropriateness of specific projects for “credit” under that</p>	

			plan.	
	D3.3-10	38-41	There is reference to a strong adaptive management and monitoring program to guide the experimental processes of CM 15 and CM 16. Please specify how this adaptive management and monitoring program is applicable to EC 15 and EC 16 under Alternative 4A.	
	D.3-11	6-8	<p>There are striped bass that overwinter in the Cache Slough during fall. Striped bass upstream spawning migration timing overlaps with downstream juvenile migration timing for juvenile salmonids. Fremont Weir overtopping events have resulted in large numbers of adult striped bass observed during fish rescue operations in the Fremont Weir post flow reduction. It is likely that there will be striped bass that utilize this migration corridor if is made available via future Fremont Weir operations.</p> <p>Future evaluation of the Yolo Bypass as a migration corridor for striped bass should be evaluated under an adaptive management program to assess whether Sacramento River predation reduction is offset by increased YB predation and to what degree.</p> <p>Please consider adding this study to 3.4.1-5.</p>	
	D.3.11	42-49	The updated Section 7 Hydro Analysis does not show appreciable difference in the proportion of flow into the interior Delta for the proposed action/Alternative 4A at Georgiana Slough which is linked in the analysis to the potential for entrainment. This section refers to Winter run then states the overall entrainment would be lower but it doesn't parse between rivers and runs of salmon. Please specify where/which runs contribute to the overall entrainment. Is it primarily a reduction in San Joaquin fall run due to less South Delta pumping or does it also refer to reduced entrainment of listed WR and SR which do not reside in the San Joaquin River system? IOS model shows overall decline in WR escapement due to reduced in-delta survival w/o increased	

			salvage benefit. Please update this section as new Section 7 analysis becomes available.	
	D.3.11	50-14 on next page	Cut and paste error. Two repeated paragraphs.	
	D.3-20	19-20	<p><i>"Operations will be managed at all times to avoid increasing the magnitude, frequency, or duration of flow reversals in Georgiana Slough above pre-NDD operations levels."</i></p> <p>Please clarify this new language as it is subject to interpretation. Does this mean conditions existing today? Or does this mean conditions at the start of operations 15 years from now including climate change, increased demand, and sea level rise? Also please clarify if this means that there will be an increase in duration and frequency of periods when there is no net downstream flow i.e. conditions representing high slack tide.</p>	
	D.3-20	33-34	<p><i>Upon approval of the BDCP a work group will be formed by the AMT to design and implement a research program to address the key uncertainties identified in Table 3.4.1-5.</i></p> <p>How will this carry over to 4A?</p>	
	D.3-21	4-7	<p><i>Bypass flow criteria can follow Table 3.4.1-2 alone if other measures developed through research can minimize effects on migrating covered fish past the north Delta diversions (e.g., floating surface structures diverting fish to the opposite side of the Sacramento River from the diversions).</i></p> <p>Is this applicable to 4A? Bypass criteria are for through Delta survival and pulse protection is for survival at the screens. Diverting fish away from the screens will only serve to address impacts in the screen reach. Simply moving fish to the other side of the river by the intakes may not have an effect in downstream or through Delta survival.</p> <p><i>"The objectives of the north Delta diversion bypass flow criteria include regulation of flows to 1) maintain fish</i></p>	

			<p><i>screen sweeping velocities; 2) reduce upstream transport from downstream channels in the channels downstream of the intakes; 3) support salmonid and pelagic fish transport and migration to regions of suitable habitat; 4) reduce losses to predation downstream of the diversions; and 5) maintain or improve rearing habitat conditions in the north Delta.”</i></p>	
	D.3-23	Footnote 5	<p>Please provide clarification on how RTO for Fremont Weir will be incorporated into Alt. 4A.</p>	
	D.3.-27	Table 3.4.1-5	<p>In general this table needs to be edited or a new table needs to be created to be consistent with 4A.</p> <p>First two lines refer to studies to determine if spring outflow and Fall X2 are needed in light of conservation measures to be implemented under HCP/NCCP. Because 4A has no conservation measures Spring Outflow and Fall X2 are necessary obviating the need for the studies.</p> <p>In addition, the Department proposes two studies for inclusion, either in the BDCP alternatives or in the new alternatives’ adaptive management program.</p> <p>Key Uncertainty #1: The effect of reduced Sacramento River flow below the NDDs on adult sturgeon migration. Reduced flows have the potential to attenuate migration cues or degrade migration conditions.</p> <p>Proposed Research Activities: Intense monitoring of the timing and duration of adult sturgeon (Green and White) migration through the low flow reach (confluence to NDDs) at various flow rates. Monitoring to be accomplished using both acoustic tag and underwater (e.g. Didson or sonar technology)</p> <p>Time Frame: Beginning immediately, and extending through the first several years of NDD operation.</p> <p>Key Uncertainty #2: The effect of reduced southern Delta exports, and less</p>	

		<p>negative OMR and Qwest flows on Delta Smelt rearing and rearing habitat in the lower San Joaquin River.</p> <p>Proposed Research Activities: Part I: A thorough review of historical data to understand the factors that led to the collapse of juvenile Delta Smelt rearing in the lower San Joaquin River and southern Delta in the early 1970s, and the role through-Delta water conveyance played in that collapse. Part II: Intense monitoring of the annual movement of adult Delta Smelt into the lower San Joaquin River and central Delta, the extent of spawning in the region, the growth, survival, and distribution of subsequent juvenile smelt, and regional habitat conditions (i.e. flows, food density, temperature, turbidity, etc.).</p> <p>Time Frame: Immediate initiation of historical data review (Part I), with a product within 5 years that is utilized to develop hypotheses to be addressed during intense monitoring phase (Part II). Part II would begin 5 years prior to initiation of northern Delta diversions, and extend through the first five years of diversions (or until 2 Wet or Above Normal Year Types and 2 drier Year Types have been monitored).</p> <p>Key Uncertainty #3: The effect of reduced Sacramento River flow below the NDDs on juvenile salmonid outmigration. Reduced flows have the potential to reduce survival of outmigrating salmonids. Recent hydro analysis being conducted through the Section 7 process suggests that entrainment into the interior Delta may not decrease substantially under 4A. Thus, evaluation of bypass flows and subsequent adaptive management may be necessary to avoid impacts to listed runs of salmonids originating in the Sacramento River.</p> <p>Proposed Research Activities: Intense monitoring of the timing and duration of outmigration through the reduced flow reach to Chipps Island at various flow rates. Monitoring to be accomplished using both acoustic tag and other tagging studies. Beginning immediately, and</p>	
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			extending through the first several years of NDD operation.	
	D.3-34	35-38	Please provide references for these studies.	
	D.3-156	Table 3.6-1 5	Table 3.6-1 5. Monitoring Actions for Covered Fish Performance Focus Area It is unclear if this section needs to be edited, updated, or replaced for compatibility with 4A.	

References Cited

McEwan, D. and T.A. Jackson (1996). Steelhead Restoration and Management Plan for California. California Department of Fish and Wildlife, p. 244

Myrick, C.A., and J.J. Cech (2005). Effects of Temperature on the Growth, Food consumption, and Thermal Tolerance of Age-0 Nimbus-strain Steelhead. North American Journal of Aquaculture 67:324–330.

Richter, A., and S.A. Kolmes (2005). Maximum Temperature Limits for Chinook, Coho, and Chum Salmon, and Steelhead Trout in the Pacific Northwest. Reviews in Fisheries Science 13:23-49.

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft—RDEIR/SDEIS Section 1

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	1-2	15	Please restate as the "Natural Community Conservation Planning Act"	
2	1-18	22	Take of species designated as a candidate species is also prohibited under Fish and Game Code, section 2085.	
3	1-19	1-11	This paraphrases the regulations and omits or modifies some provisions. Please either quote completely and accurately or note that this is the drafter's summary.	
4	1-19	16	Please restate as the "Natural Community Conservation Planning Act"	
5	1-19	20-22	Suggest using language from Fish and Game Code, section 2805(h), which defines a natural community conservation plan.	
6	1-20	1-4	CDFW does not agree that 14 C.C.R. section 1.72 defines "river, stream or lake" for purposes of Fish and Game Code section 1602. Specifically, the Fish and Game Commission did not have authority, and did not intend, to adopt 14. C.C.R. section 1.72 for that purpose. Instead, the available rulemaking records indicate the Commission adopted section 1.72 as part of its sport fishing regulations. CDFW has not relied on section 1.72 as a matter of law to define "stream" in Fish and Game Code section 1602. Please delete this sentence.	

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft—Appendix 3B

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
			General	
1	multiple		Please reference the specific section where Resource Restoration and Protection Principles are defined.	
			Appendix 3B	
2	multiple		The crosswalk between Environmental Commitments (ECs) in Alt. 4A and Conservation Measures (CMs) in other alternatives is still not clear. Appendix 3B should clearly define which CM each of the numbered ECs refer to (for example, in table 3B-1, which only covers best management practices), and reference changes from the BDCP, either in Appendix D or as described in comment 4 below. Some of these definitions are buried in parentheses in sections describing CMs, but not all of them are defined this way (see comment 3 below).	
3	3B-154	4-5	The description of CM7 riparian restoration refers to EC 3 and EC 7 is not linked back to a CM. We suggest revising this section because CM3 was designed to protect natural communities, and CM7 was designed to restore riparian. It would make sense for EC 7 to be linked with CM 7 and for EC 3 to be linked with CM 3.	
4	multiple		Please include changes in acreage targets in the description of the link between each of the numbered ECs and corresponding CMs. For example, CM7 committed to 5,000 acres of restored riparian and EC 7 commits to restore/create 251 acres. Please also include these differences in acreages between the BDCP public draft and Alt 4A in the crosswalk table suggested in comment 2 above.	

**BDCP/California Water Fix RDEIR/SDEIS
Comment Form**

Document: July 15, 2015 Public Draft EIR/EIS—Appendix D

Comment Source: *California Department of Fish and Wildlife*

Submittal Date: *October 30, 2015*

No.	Page	Line #	Comment	ICF Response
1	General comment		<p>The effects analyses and CEQA conclusions associated with Alternative 4A (described in Section 4) include frequent references to both minimization measures unique to Alternative 4A, and AMMs developed in support of Alternative 4 and described in Appendix D of the REIR/EIR or the 2013 Public Draft. Occasionally the minimization measures described in Alt 4A are not consistent with the AMMs developed for Alternative 4, although both are referenced in an effects analysis. This overlap between Alternative 4 and 4A creates confusion regarding the specific measures that will be implemented to avoid and minimize impacts, and achieve a “less than significant impact.”</p> <p>Please carefully review mitigation measures proposed under Alternative 4A and AMMs proposed under Alternative 4 to ensure that their requirements are consistent and complimentary. For example, if Alternative 4A is implemented, the final document should be constructed in such a way that the lead and responsible agencies can easily refer to specific sections to determine pre-project and construction minimization measures required for each special status species and associated mitigation commitments. In addition to this general comment, CDFW staff submitted several specific comments regarding potential conflicts between Alt 4A mitigation measures and Alt 4 AMMs in this table, and in comments to Section 4.3.8.</p>	
2	D -93	13	<p>Many of the bullet points within this section are too general to benefit all covered species. For example generally accepted relocation conditions and protocol (page D-94, lines 36-42) for California tiger salamander (CTS) are different from the standard conditions and protocol for giant garter snake. We suggest adding text to make it clear that the measures described in the 2081b permit prevail if/when they differ from these measures for species listed under CESA.</p>	
3	D-101	19	<p>We suggest adding text from Mitigation Measure</p>	

			BIO-170 here to ensure consistency between AMM 11 and BIO-170. Specifically, please restate the requirements to establish a 250 ft buffer surrounding sensitive plant species occurrences when they occur in, or adjacent to, construction and can feasibly be avoided (see page 4.3.8-322 lines 24-36). Also restate the requirement to compensate for loss of individuals or occupied habitat of special-status plant species through the acquisition, protection, and subsequent management in perpetuity of other existing occurrences as a 2:1 ratio (see page 4.3.8-322 lines 37-45).	
4	D-103	9	Please check and revise AMM18 for consistency with the 2081b permit application.	
5	D.3-110	24-25	CDFW cannot authorize take of greater sandhill crane outside of the NCCPA context. As a result, CDFW review of the "Powerline Plan and Analysis" will not result in such approval and any take resulting from powerline construction in the implementation of Alternative 4A would be unlawful.	
6	D.3-115	17	We suggest deleting the word "marsh". Pre-project surveys for TRBL colonies should not be limited to marsh habitat. TRBL is known to establish nesting colonies in a wide range of habitat types including triticale fields, Himalayan blackberry stands, and mustard. Instead, add a sentence listing all possible habitat types that could be occupied by a TRBL nesting colony, as described in Section 4.3.8, to ensure that pre-project surveys have the highest possibility of identifying colonies in, or adjacent to, project activities.	
7	D.3-115	20-22	We suggest simplifying this reference to require consulting the UCD tricolored blackbird portal project which includes surveys outside Suisun Marsh that could overlap with project activities geographically.	
8	D.3-115	24-28	This AMM is too vague and doesn't require any avoidance of nesting colonies if the project proponent deems avoidance "infeasible". It is not clear what is meant by the following sentence, and how this confers protection to the species given the regulatory approach for the new preferred alternative: "AMMs will be incorporated into the project design and other portions of the application package prior to submission for coverage under the BDCP."	
9	D.3-115	33-36	Suggest changing this to a requirement for a "CDFW-approved biologist with tricolored	

			blackbird experience”.	
10	D.3-115	39-41	Suggest rewording this sentence: “Exceptions to the minimum non-disturbance buffer distance will be evaluated and approved by wildlife agencies on a case by-case basis.”	
11	D.3-124	13	We suggest replacing “any kind of vegetation types consistent with black rail use in the Delta”. With “vegetation types consistent with black rail in the Delta, as determined by field evaluations conducted by a qualified biologist with experience surveying for black rail.” The vegetation types consistent with black rail use in the Delta are not defined in the text.	
12	D.3-124	33	We suggest initiating sunset surveys 75 minutes before sunset. This time frame was suggested by CDFW experts based on field survey experience.	
13	D.3-124	35	Please revise to “4.5 National Geodetic Vertical Datum” The “4.5” was left out.	
14	D.3-126	2-3	Because of the buffer requirements below, this would be clearer if it stated that construction will be restricted to the greatest extent possible during the nesting season where nest sites occur within 0.25 miles of construction activities, unless an already existing suitable buffer between the construction activity and the nest site is identified by a CDFW-approved biologist.	
15	D.3-126	26-29	The first and second sentences appear to contradict each other. Can nest trees be removed during the breeding season, or not? We suggest prohibiting nest tree removal during the breeding season.	
16	D.3-126	32-34	The final plan may include additional measures that are specific to site conditions, but may also modify the measures following this paragraph. That intent was lost when the text was changed. Please also note that CDFW review or approval of the nesting bird monitoring and management plan, or other CDFW approvals required by this AMM, will not result in approval for take of white-tailed kite, and any take would be unlawful.	
17	D.3-127	33-34	Change references to CM7 and CM11 to Environmental Commitments. This comment applies throughout Appendix D.	
18	D.3-128	48-50	Is alfalfa high value foraging habitat for white-tailed kite? If so, please provide justification and citations. According to PRBO, kites foraged more efficiently over fallow bare ground than barley fields.	
19	D-231	7	There are other shorebirds that have similar foraging habits as black rail. This sentence should also refer to other shorebirds that feed on aquatic	

			invertebrates in tidal habitats.	
20	D-234	11	Change "mercury" to "selenium".	
21	D-239 and D-240	21-48 and 1-25	These bullets are currently listed under the subheading of prohibited uses. Please revise this section to ensure that it is clear which bullet points describe actions that are prohibited on CE properties and which bullets describe requirements of CEs (for example wildlife agency monitoring compliance with easement terms).	

From: Olson, Theresa <tolson@usbr.gov>
Sent: Wednesday, November 04, 2015 9:45 AM
To: BDCPcomments
Subject: Fwd: CDFW Comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS (10 attachments)
Attachments: RDEIR_EIS CDFW comments_Cover Memo.docx; RDEIR_EIS CDFW comments_Terrestrial.docx; RDEIR_EIS CDFW comments_unresolved.docx; RDEIR_EIS CDFW comments_Aquatic.docx; RDEIR_EIS CDFW comments_Summary of CEQA Conclusions.docx; RDEIR_EIS CDFW comments_Section 1.docx; RDEIR_EIS CDFW comments_Section 5.docx; RDEIR_EIS CDFW comments_Appendix3B.docx; RDEIR_EIS CDFW comments_AppendixA Section8.docx; RDEIR_EIS CDFW comments_AppendixD.docx

Here is DFW's

----- Forwarded message -----

From: **Dibble, Chad@Wildlife** <Chad.Dibble@wildlife.ca.gov>
Date: Fri, Oct 30, 2015 at 1:43 PM
Subject: CDFW Comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS (10 attachments)
To: "Enos, Cassandra@DWR" <Cassandra.Enos@water.ca.gov>, "mbanonis@usbr.gov" <mbanonis@usbr.gov>
Cc: "Jacobs, Brooke@Wildlife" <Brooke.Jacobs@wildlife.ca.gov>, "foesman.erin@epa.gov" <foesman.erin@epa.gov>, "Tucker, Michael@NOAA" <Michael.Tucker@noaa.gov>, "Ryan.Wulff@noaa.gov" <Ryan.Wulff@noaa.gov>, "Yee, Marcus@DWR" <Marcus.Yee@water.ca.gov>, Steve Centerwall <steve.centerwall@icfi.com>, "jennifer.pierre@icfi.com" <jennifer.pierre@icfi.com>, "michael.g.nepstad@usace.army.mil" <michael.g.nepstad@usace.army.mil>, "Rinek, Lori @fws.gov" <lori_rinek@fws.gov>, "cathy.marcinkevage@noaa.gov" <cathy.marcinkevage@noaa.gov>, "Olson, Theresa @usbr.gov" <tolson@usbr.gov>, "teresa.chan@icfi.com" <teresa.chan@icfi.com>, "jphillips@usbr.gov" <jphillips@usbr.gov>, "Redler, Yvette@noaa.gov" <Yvette.Redler@noaa.gov>, "Wilcox, Carl@Wildlife" <Carl.Wilcox@wildlife.ca.gov>, "mknecht@usbr.gov" <mknecht@usbr.gov>, "shelby.l.mendez@noaa.gov" <shelby.l.mendez@noaa.gov>, "Kundargi, Kenneth@Wildlife" <Kenneth.Kundargi@wildlife.ca.gov>, "barbara_beggs@fws.gov" <barbara_beggs@fws.gov>, "Bogdan, Kenneth M.@DWR" <Kenneth.Bogdan@water.ca.gov>, "Michael.s.jewell@usace.army.mil" <Michael.s.jewell@usace.army.mil>, "Rabin, Larry@fws.gov" <Larry.Rabin@fws.gov>, "Kim S Turner@fws.gov" <Kim_S_Turner@fws.gov>, "Little, Shannon@Wildlife" <Shannon.Little@wildlife.ca.gov>, "Starr, Jim@Wildlife" <Jim.Starr@wildlife.ca.gov>

Cassandra/Michelle,

Attached are CDFW's comments on the BDCP/CWF July 2015 Public Draft RDEIR/SDEIS. As mentioned in this morning's CEQA/NEPA meeting, the cover memo outlines the overall general concerns we have, while the comment forms (9 attachments) provide more specific detail separated by specific species and sections of the document. Should you have questions or concerns regarding these comments please feel free to contact me.

Thank you.

Chad Dibble

Environmental Program Manager

California Department of Fish and Wildlife – Water Branch

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

OFFICE OF THE
REGIONAL ADMINISTRATOR

Aug 26, 2014

Will Stelle, Regional Administrator
West Coast Region National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Subject: Draft Environmental Impact Statement for the Bay Delta Conservation Plan, San Francisco Bay Delta, California (CEQ# 20130365)

Dear Mr. Stelle:

The U.S. Environmental Protection Agency has reviewed the Bay Delta Conservation Plan (BDCP) Draft EIS pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. The Draft EIS explores options for a comprehensive conservation strategy to restore and protect the Sacramento–San Joaquin Delta’s ecosystem health, water supply, and water quality.

As you know, the San Francisco Bay/Sacramento-San Joaquin Delta Estuary is one of the largest and most important estuarine systems on the Pacific Coast of the United States, supporting over 750 species. It is the hub of California’s water distribution system, supplying drinking water to 25 million people and irrigation water to 4 million acres of farmland. The decline of aquatic resources in the Estuary, along with the corresponding impacts on urban and agricultural water districts that rely on water exported from it, present significant challenges. Recent circumstances have only underscored the importance of working together on these issues, as California is experiencing severe drought and water shortages. We believe the NEPA process is well-suited to bring all of these considerations together, including the consideration of the environmental impacts of reasonable alternatives to the BDCP as it is currently proposed. We appreciate the effort to prepare the Draft EIS, and we support your recent decision to prepare a Supplemental Draft EIS to take a closer look at these issues.

EPA fully supports the stated purpose of the BDCP effort: to produce a broad, long-term planning strategy that would meet the dual goals of water reliability and species recovery in this valuable ecosystem, and we recognize the potential benefits of a new conveyance facility. However, we are concerned that the actions proposed in the Draft EIS may result in violations of Clean Water Act water quality standards and further degrade the ecosystem.

Our comments are consistent with those we have made in conversations that have taken place over the last few years among the agencies involved in managing the Delta. Many of our comments have also been made by others, both formally and informally, throughout the process, and we believe that they reflect a developing consensus within the scientific and regulatory communities. We are committed to continuing to work with you and other stakeholders toward a project proposal that meets the dual goals

of water reliability and species recovery in the Bay Delta, and toward a well documented EIS that adequately informs decision-makers and the public, as required by NEPA.

Clean Water Act Water Quality Standards

The Draft EIS shows that operating any of the proposed conveyance facilities, which constitute Conservation Measure 1 (CM1), would contribute to increased and persistent violations of water quality standards in the Delta, set under the Clean Water Act, measured by electrical conductivity (EC) and chloride concentrations. We recommend that the Supplemental Draft EIS include one or more alternatives that would, instead, facilitate attainment of all water quality standards in the Delta. Specifically, we recommend that an alternative be developed that would, at minimum, not contribute to an increase in the magnitude or frequency of exceedance of water quality objectives, and that would address the need for water availability and greater freshwater flow through the Delta. Such an alternative should result in a decrease in the state and federal water projects' contributions to the exceedance of any water quality objectives in the Delta.

We also note that, while CM1 would improve the water quality for agricultural and municipal water agencies that receive water exported from the Delta, water quality could worsen for farmers and municipalities who divert water directly from the Delta. In that regard, we recommend that the Supplemental Draft EIS consider measures to ensure that the project would not increase concentrations of bromide around the intake for the North Bay Aqueduct at Barker Slough. In addition, we recommend consideration of whether additional measures, such as operational modifications both upstream and downstream, are needed to avoid increasing mercury and selenium concentrations and bioavailability in the Delta.

The Draft EIS indicates that CM1 would not protect beneficial uses for aquatic life, thereby violating the Clean Water Act. Total freshwater flows will likely diminish in the years ahead as a result of drought and climate change. Continued exports at today's prevailing levels would, therefore, result in even lower flows through the Delta in a likely future with less available water. We recommend that the Supplemental Draft EIS consider modified operational scenarios for CM1 alternatives that would have beneficial effects on covered fish populations during all life stages and attain water quality standards in the Bay Delta.

Habitat Restoration

The Draft EIS describes a general proposal to restore approximately 150,000 acres of wetlands, uplands, grasslands, and riparian areas in and around the Delta to offset the adverse impacts of the continued operations of the water projects. However, the Draft EIS does not indicate whether suitable acreage is available or whether restoration alone would be sufficient to recover fish populations. We are concerned over the sole reliance on habitat restoration for ecosystem recovery, recognizing that existing freshwater diversions and significantly diminished seaward flows have played a significant role in precluding the recovery of Bay Delta ecosystem processes and declining fish populations. We recommend that the Supplemental Draft EIS consider measures to ensure freshwater flow that can meet the needs of those populations and the ecosystem as a whole, and is supported by the best available science. We recommend that this analysis recognize the demonstrated significant correlations between freshwater flow and fish species abundance. We also recommend that the Supplemental Draft EIS include gradients of partial success for each habitat type to be restored, as supported by available science. The impacts

could be re-evaluated relative to each alternative (CMs2-11) in light of these gradients and the likely success rates for each habitat restoration type.

Alternatives

The Draft EIS defines the alternatives in terms of the design and capacity of the proposed conveyance structure. Each alternative is paired with a particular operational scenario. EPA agreed with this organizational construct early in the BDCP process, expecting that the Draft EIS would present a range of fully evaluated alternatives that clarifies the environmental and water supply tradeoffs being considered. The Draft EIS, however, focuses primarily on Alternative 4. It appears that the environmental impacts of certain other alternatives would be reduced if those alternatives were matched with more optimal operational criteria (for example, Alternative 5 with Operational Scenario F). Other reasonable alternatives could be developed by incorporating a suite of measures, including Integrated Water Management, water conservation, levee maintenance, and decreased reliance on the Delta.¹ Such alternatives would be consistent with the purpose and need for the project, as well as with the California Bay Delta Memorandum of Understanding among federal agencies² and the Delta Reform Act of 2009.

Project-level Analysis

The Draft EIS states that it includes a *project-level* analysis of environmental effects associated with CM1 (the conveyance facilities, which define the alternatives), and a *programmatic-level* analysis of 21 other Conservation Measures, including a suite of habitat restoration and aquatic stressors management initiatives. Programmatic-level inputs were used in some of the “project-level” analyses. We recommend that the Supplemental Draft EIS include project-level information and analyses for the conveyance tunnels, including the information necessary for permit decisions, to support the federal decision.

Upstream/Downstream Impacts

The federal and State water management systems in the Delta are highly interconnected, both functionally and physically. The Draft EIS does not address how changes in the Delta can affect resources in downstream waters, such as San Francisco Bay, and require changes in upstream operations, which may result in indirect environmental impacts that must also be evaluated. We recommend that the Supplemental Draft EIS include an analysis of upstream and downstream impacts.

NEPA Effects Determination

The Draft EIS presents *NEPA Effects Determinations*, but does not describe the decision rules that were used to make those determinations from the analytical information presented for each impact category. We recommend that the *NEPA Effects Determinations* and thresholds -- quantitative when possible -- be provided for each category so that it is clear why some estimated impacts result in one *NEPA Effects Determination* over another. We also recommend that the Supplemental Draft EIS explain whether all metrics are considered equal in the analysis or some are weighted. Please clarify whether negative impacts in one metric category translate into an adverse determination, regardless of the other metrics. Lastly, it would be helpful to include summary tables for each impact category so that the public and decision-makers can understand the metrics and their results and how they compare among alternatives.

¹ The “Portfolio Approach” developed by a diverse set of stakeholders is one attempt to place Delta water management into the larger context of facilities investments and integrated operations. http://www.sdcwa.org/sites/default/files/files/news-center/top-issues/portfolio-based-bay-delta-conceptual-alternative_1-16-13.pdf

² <http://www2.epa.gov/sites/production/files/documents/baydeltamousigned.pdf>

Adaptive Management

The Draft EIS explains that the adaptive management program is a work in progress. The specific approach for an adaptive management program and its effect on environmental consequences is fundamental to the success of the BDCP and should be addressed during the NEPA process. We recommend that a more detailed adaptive management program be provided in the Supplemental Draft EIS, since the goal of species recovery relies significantly on an effective adaptive management program. As you develop the plan, include detailed information on the plan's objectives, explicit thresholds, alternative hypotheses, responsive actions, and designated responsible parties.

Conclusion

EPA remains committed to working with the federal and state lead agencies to develop an environmentally sound, scientifically defensible, and effective plan for restoring the Bay Delta ecosystem and achieving greater water supply reliability. Please note that, because you are preparing a Supplemental Draft EIS, which we anticipate will address many of the issues raised about this Draft EIS, including the issues we have outlined here, EPA will defer our rating until the Supplemental Draft is circulated for public review and comment. We have also enclosed more detailed comments and recommendations for your consideration.

We are available to discuss our comments and recommendations. Please send one hard, and one electronic, copy of the Supplemental Draft EIS to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at 415-947-8702. Alternatively, your office may contact Kathleen Johnson, Enforcement Division Director. Ms. Johnson can be reached at 415-972-3873.

Sincerely,

/S/

Jared Blumenfeld

Enclosure

cc: Ren Lohofener, Regional Director, Pacific Southwest Region, U.S. Fish and Wildlife Service
David Murillo, Regional Director, Mid Pacific Region, U.S. Bureau of Reclamation

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I. Water Quality Impacts

A. Adverse Impacts

Chapter 8 indicates that all project alternatives would result in adverse, significant, unmitigated effects to water quality and one or more beneficial uses within the affected water bodies. 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. 8-439);
- Bromide, chloride, dissolved organic carbon, and electrical conductivity (EC) are expected to increase due to changes in hydrodynamics as a result of the implementation of the CM1 Alternative 4 (pp.8-420, -428, -454, and -439). In addition, the feasibility of mitigation actions for EC is uncertain (p. 8-441); therefore, the net effect to overall salinity levels is unclear;
- Mercury, pesticide, and selenium exposure levels may increase and be cumulatively significant (p. 8-446, -767, -768); and
- Water quality degradation resulting from the increased pumping of freshwater from the North Delta could cause increases in water treatment costs (p. 8-420).

All Bay Delta Estuary waters are impaired due to numerous contaminants, including pesticides, manufacturing compounds, metals (including selenium), pathogens, nutrients/low dissolved oxygen, invasive species, salinity, and toxicity from unknown sources. Without adequate mitigation, these impairments would be exacerbated by any of the alternatives evaluated in the Draft EIS. Poor water quality in the Bay Delta Estuary and its tributaries adversely affects terrestrial and aquatic ecosystems, drinking water, recreation, industry, agriculture, and the local, state, and interstate economy.

***Recommendation:** Discuss mitigation measures that would reduce the projected adverse impacts on water quality, and discuss whether the proposed actions would contribute to impairments of beneficial uses or further degrade water quality.*

B. Salinity (Electrical Conductivity, Chloride) and Bromide

1. Water Quality Standards Exceedances and Degradation

The Bay Delta Water Quality Control Plan (WQCP) contains EC objectives for the Delta to protect agricultural and fish and wildlife beneficial uses, and chloride objectives to protect municipal and industrial water supply beneficial uses. Bromide, a significant precursor to brominated disinfection byproducts, is subject to CALFED Drinking Water Program goals (p. 8-42). The Draft EIS estimates that EC, chloride and bromide concentrations would increase under CM1 Alternative 4, relative to the No Action Alternative and Existing Conditions for Delta locations. The document predicts increased exceedances of numeric water quality standards, which suggests that CM1 Alternative 4 would result in a loss of protection for municipal, agricultural, and aquatic life beneficial uses. Specifically, CM1 Alternative 4 would result in:

- A 17% increase in days out of compliance with the agricultural EC standard at Emmaton (p. 8-252 lines 6-7). The EC objective at Emmaton is intended to protect agricultural beneficial uses, but also has ancillary benefits to aquatic life. Increasing noncompliance days would further contribute to existing EC water quality impairments in the western Delta, and degrade beneficial use protection for agricultural and aquatic life beneficial uses.

- A 7% increase in days exceeding the municipal chloride standard (250 milligrams per liter (mg/L) mean daily maximum) at Contra Costa Canal Pumping Plant #1 (p. 8-243 line 26) and “substantial degradation during the months October through December when average concentrations would be near, or exceed, the objective” (p. 8-243 lines 33-34 and Appendix 8G, 27 Table CI-9).
- A doubling of the frequency of exceeding the lower municipal chloride standard at Antioch and Contra Costa Canal Pumping Plant #1: “All of the Alternative H1-H4 Scenarios would result in substantially increased chloride concentrations in the Delta such that frequency of exceeding the 150 mg/L Bay-Delta WQCP objective would approximately double” compared to Existing Conditions (p. 8-429) and the No Action Alternative (Appendix 8G Table CI-64).
- Increased EC levels in Suisun Marsh, exacerbation of the existing EC water quality impairment, and degradation of aquatic life beneficial use protection (p. 8-438 and Appendix 8H-27). “The most substantial EC increase would occur at Beldon Landing with long-term average EC levels increasing by 1.3-6.0 milliSiemens per centimeter (mS/cm), depending on the month and operations scenario, at least doubling during some months the long-term average EC relative to Existing Conditions” and the No Action Alternative (p. 8-438).
- Higher quality water to those receiving the exported water, but adverse impacts on those who rely on water directly from the Delta: “the operations and maintenance activities under Scenario H1-H4 of Alternative 4 would cause substantial degradation to water quality with respect to bromide at Barker Slough... and could necessitate changes in water treatment plant operations or require treatment plant upgrades” (p.8-420).

The EC and chloride analyses in the Draft EIS provide some confusing results. For example, the 16-year average EC concentration (mass balance) at Emmaton is 887 micromhos per centimeter ($\mu\text{mhos/cm}$) for CM7, and 935 $\mu\text{mhos/cm}$ for CM8, even though outflow (an indicator of freshwater flow to the estuary) is twice as high for CM8. Similarly, chloride concentrations predicted for CM7 (mass balance and EC-chloride relationship) at Antioch on the San Joaquin River are slightly lower than those for CM8.

The water quality chapter of the Draft EIS does not evaluate the alternatives against the full suite of Water Quality Objectives for Fish and Wildlife Beneficial Uses, which are found in Table 3 of the Bay Delta WQCP. The Delta outflow objective is discussed in Chapter 5 Water Supply, and a brief discussion of Delta outflow objective is in the HCP for only the CEQA Preferred Alternative 4.

Recommendations: Describe mitigation measures that would prevent the proposed project from resulting in increased exceedances of water quality objectives in the already-degraded Delta. These measures may include reducing exports to provide more outflow and mitigate salinity intrusion.

Explain the differences in the predictions among CM1 alternatives, including why twice as much outflow would result in higher salinity concentrations for Alternative 8 relative to Alternative 7. Disclose the confidence intervals for the mass-balance and EC-chloride relationship approaches for predicting future concentrations of EC and chloride.

Evaluate all CM1 alternatives with respect to all water quality standards listed in Tables 1-3 of the Bay-Delta WQCP, and indicate whether each standard would be met under each alternative.

2. Mitigation Effectiveness

Appendix 8H “Electrical Conductivity” states that, although the modeling results show exceedences of water quality D-1641 standards, the project proponents “intend” to operate the State Water Project and Central Valley Project facilities by fine tuning reservoir storage and exports in real time to meet the standards (p. 8H-1). The water quality objectives that would be met in this manner are not specified, nor is an estimate provided of the impact of this measure on water supply. Furthermore, the Draft EIS includes the caveat that “if sufficient operational flexibility to offset chloride increases is not feasible under Alternative 4 operations, achieving chloride reduction pursuant to this mitigation measure would not be feasible under this Alternative” (p.8-430). A similar caveat is stated regarding bromide (p. 8-422). These statements suggest that the water supply exports that define the Alternative 4 operational scenario would be given higher priority than meeting water quality standards, thus rendering that scenario potentially inconsistent with the protection of beneficial uses.

Recommendations: *Clearly identify the water quality objectives that the proponents intend to meet by fine-tuning reservoir storage and exports in real time, and clearly state this intention as an enforceable commitment. Reconcile the conflicting caveats regarding operational flexibility with this commitment.*

Provide an estimate of the amount of water that would be needed to meet water quality standards during periods when the modeling predicts exceedances, and describe how the use of water for this purpose would impact water diversions for upstream and downstream users. Include a comparison against drought years.

Provide historical data to illustrate how D-1641 standards have been met in the past, including the number of times that DWR has submitted Temporary Urgency Change Petitions with the State Water Board requesting modification of requirements of D-1641 because of drought conditions.

3. Mitigation Relationship to Water Quality Standards

EPA understands that the modeling for the water quality analysis was based on an assumption that the Emmaton EC water quality standard compliance point would be moved four miles upstream to Three Mile Slough, as DWR is anticipated to request. We also understand that DWR will request that the State Water Resources Control Board include this compliance point change as part of the Phase II update to the Bay Delta WQCP. The State Board will review this request, as will the EPA. We are concerned that the intended mitigation for the water quality violations at Emmaton relies on a change in the compliance point. We consider the movement of the compliance point to Three Mile Slough a relaxation of the EC standard because it would potentially permit four miles of additional salinity intrusion into the upper estuary, which could have negative impacts on multiple beneficial uses.

Recommendations: *Explain the technical, scientific, and policy reasons for using Three Mile Slough in DSM2 modeling for assessing EC compliance at Emmaton. Describe how EC was estimated at Emmaton under the No Action Alternative and for Existing Conditions if it was not directly estimated using DSM2; and interpret the comparison of EC at Three Mile Slough in CMI operational scenarios to EC at Emmaton.*

Identify all of the water quality standards, including EC at Emmaton, which the BDCP assumes will be modified. Disclose the process for obtaining a modification of a water quality standard.

4. Impacts of Changes to the Salinity Gradient (X2)

The salinity gradient, approximated by X2¹, has an inverse relationship with many diverse bay and estuarine fishes, including the threatened and endangered species that are the conservation targets of the BDCP. As X2 decreases (i.e., moves out to sea) habitat conditions for some species improve and relative abundance increases². Because the location of X2 is closely tied to freshwater flow through the Delta, the proposed project would have a strong influence on this parameter, yet the Draft EIS does not analyze each alternative's impacts on aquatic life in the context of this relationship.

Examination of the predicted changes in monthly average X2 for each CM1 operational scenario, A through G, would help determine how the quantity and quality of estuarine habitats and relative fish abundance would change under those scenarios for multiple fish species. It would also be useful to estimate the range of monthly average X2 values (and/or monthly Delta outflow) for each alternative and compare it to the pattern of freshwater flows and salinity gradients that characterized a reference time period when resident and migratory fish populations were in comparatively better condition. The operational scenarios that more closely mimic the reference period freshwater flow and salinity gradient pattern could be expected to produce aquatic conditions and habitats that benefit native and migratory fishes and support important food web processes at all ecosystem levels.

Freshwater flow may be one of the best tools available in the short term to improve fish populations and protect aquatic life beneficial uses prior to the completion of planned restoration projects, given its widely cited importance to ecosystem recovery. Relative fish abundance responses to freshwater flow can be estimated using regression equations provided in peer reviewed literature and government reports.³ The equations do not directly include the effects of tidal marsh and floodplain restoration on fish populations; therefore, in their current form, they would be most useful for evaluating the impacts of flow variations prior to the completion of restoration projects. We anticipate that the ability to measure the benefits of restoration projects will improve after the projects are started and measurements and monitoring data become available.

The Draft EIS does not evaluate potential downstream effects of CM1 alternatives on San Francisco Bay fish populations. The description of impacts to San Francisco Bay from Delta Outflow changes (p. 11-132) stops at Suisun Bay even though outflow affects relative abundance of San Francisco Bay fishes such as Bay shrimp, starry flounder, and Pacific Herring. Some of these populations may be negatively affected by reduced outflows associated with CM1 alternatives, and the effect of restoration CMs (2-12) on these fish populations may or may not be beneficial.

Recommendations: Describe the estuarine salinity gradient and how it defines important aquatic habitats, including marine, low salinity zones, and migratory corridors for target fishes. Describe its relevance to important aquatic life communities, including phytoplankton and zooplankton.

¹ X2 refers to the distance from the Golden Gate up the axis of the estuary to the point where daily average salinity is 2 parts per thousand at 1 meter off the bottom (Jassby et. al. 1995).

² Jassby AD, Kimmerer WJ, Monismith SG, Armor C, Cloern JE, Powell TM, Schubel JR, Vendlinski TJ. 1995. Isohaline position as a habitat indicator for estuarine applications. *Ecological Applications* 5(1): 272-289;

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; Kimmerer WJ, Gross ES, MacWilliams ML. 2009. Is the response of estuarine nekton to freshwater flow in the San Francisco Estuary explained by variation in habitat volume? *Estuaries and Coasts* 32: 375-389.

³ 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_sprinfo/afrp_2005.pdf;

Jassby AD, Kimmerer WJ, Monismith SG, Armor C, Cloern JE, Powell TM, Schubel JR, Vendlinski TJ. 1995. Isohaline position as a habitat indicator for estuarine applications. *Ecological Applications* 5(1): 272-289;

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;

Kimmerer WJ, Gross ES, MacWilliams ML. 2009. Is the response of estuarine nekton to freshwater flow in the San Francisco Estuary explained by variation in habitat volume? *Estuaries and Coasts* 32: 375-389.

Describe the Delta outflow objective in the Water Quality Chapter, including a description of the “X2” concept, recognizing that the “X2” concept provides the foundation for the Delta outflow objective and is the basis for protecting springtime estuarine habitat for resident and migratory fishes, which are the targets of the BDCP.

Include a year-round salinity gradient and/or Delta outflow analysis for each CM1 alternative. This can be accomplished using information already generated for the BDCP EIS.⁴ Compare the results to a defined and supported reference period to determine how closely each scenario may mimic the salinity gradient and/or monthly outflow pattern. Alternatively, use three-dimensional modeling that maps the salinity gradient within the estuary on a monthly time step for all CM1 alternatives. This would make it possible to estimate the size and location of salinity zones, such as the low salinity zone, under different operational scenarios; however, it is not clear if this approach could be easily compared to a reference period using the same modeling tools.

Include at least one-dimensional salinity gradient and Delta outflow analyses for the fish species evaluated in Chapter 11. Define and support an agreed upon relative reference period for the analyses.

Use the referenced flow-abundance tools to predict a range of potential fish abundance changes under each operational scenario for CM1. The Kimmerer 2002 relationships should be used to evaluate potential downstream impacts to Bay fish populations. Provide the results of these analyses and explain that they do not include benefits of habitat restoration or entrainment reductions from minimizing use of south Delta pumping facilities when they cause the most harm for salmonids.⁵

C. Potential Increases in Methylmercury Formation and Transport

EPA agrees that restoring wetlands and floodplains in and near the Delta is an essential component of reviving the Estuary’s health; however, nearly all the locations targeted for habitat restoration in the Delta have been, or are at risk of being, contaminated with mercury from historical mining sources and ongoing air deposition from industry. Sport fish in the Delta are already burdened with higher concentrations of mercury than anywhere else in the State,⁶ and the presence of this powerful neurotoxin in the food web poses a threat to public health and the ecosystem as a whole. For this reason, health advisories have been issued for the Delta and several upstream rivers.

The BDCP relies heavily on proposed restoration in Yolo Bypass to mitigate for the adverse impacts of the CM1 alternatives on fish populations, noting that the Bypass is one of the places in the Delta that shows the most potential for providing floodplain benefits for fish, including salmon (BDCP p. 2-80). The Draft EIS, however, says that the Yolo Bypass may contribute up to 40% of the total methylmercury production in the entire Sacramento watershed (p. 25-63). The State Water Board has also observed that, when the Yolo Bypass is flooded, it becomes the dominant source of methylmercury to the Delta, and that restoration activities could exacerbate the existing mercury problem.⁷ While EPA strongly supports restoration of aquatic habitat in the Delta, caution must be exercised to ensure that it

⁴ Information needed to support salinity gradient and Delta outflow analyses appears to have been developed by completed modeling efforts for BDCP. The salinity gradient and low salinity zone are discussed in the HCP; X2 and Delta outflow are CALSIM outputs; a 3-dimensional model (UnTRIM) was used in Appendix 5A (Part D, Attachment 3 “Evaluation of Sea Level Rise Effects using UNTRIM San Francisco Bay-Delta Model”) to predict salinity gradient changes in climate change scenarios; and a spring Delta outflow comparison was provided for the longfin smelt analysis in the Draft EIS. The longfin smelt analysis in Chapter 11 includes a comparison of average monthly spring Delta outflow between CEQA and NEPA baselines and the H1 – H4 operational scenarios.

⁵ For more information, see EPA’s comments to the State Water Resources Control Board regarding the State’s effort to improve aquatic life beneficial use protection by modifying and/or adopting new water quality standards for flow in the Delta. See letter from US EPA to SWRCB, December 11, 2012, available at <http://www2.epa.gov/sites/production/files/documents/sfdelta-decpost-workshopltr-dec2012.pdf>; EPA presentation to SWRCB available at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/wrkshp2/erinforenman.pdf

⁶ SWAMP- Surface Water Ambient Monitoring Program http://www.waterboards.ca.gov/water_issues/programs/swamp/rivers_study.shtml

⁷ 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

does not result in unintended consequences that adversely affect water quality. Minimizing the formation and mobilization of methylmercury in wetlands is critical. Given the already high levels of mercury in the system, restoration in certain locations should be avoided if methylmercury production cannot otherwise be reduced or mitigated. For this reason, the BDCP's restoration acreage goals may not be attainable.

The DEIS underestimates the potential impacts of methylmercury on covered species and public health. Quantification of the methylmercury contributions from the proposed restoration were not provided in the document (this is acknowledged on p. 8-260), and the methylmercury NEPA Effects determinations rely on the success of unproven mitigation methods (CM12) that are currently under development to minimize formation and transport of methylmercury from Yolo Bypass, Cache Slough Complex, and the Cosumnes River Restoration Opportunity Areas (p.3-154). In the AQUA-8 "Effects of Contaminants Associated with Restoration Measures" evaluation of the impact of methylmercury, selenium, and other contaminants on delta smelt, the analysis of Alternative 1A concludes that methylmercury impacts to Delta smelt and winter-run Chinook salmon are "uncertain" (p. 11-277, 11-343). The analysis for Alternative 1A (and subsequent alternatives)⁸ states that restoration actions (CM2, CM4–CM7, and CM10) may increase production, mobilization, and bioavailability of methylmercury in the aquatic system, but that many effects are unknown at this time.

Research studies in the Yolo Bypass that were conducted by the US Geological Survey found methylmercury production values in Yolo Bypass managed wetlands and agricultural lands to be "among the highest ever recorded in wetlands."⁹ The Yolo Bypass mercury bioaccumulation study¹⁰ reported that all caged and wild fishes sampled had methylmercury fish tissue concentrations greater than the small fish tissue objective in the Delta Methylmercury TMDL (0.03 micrograms per kilogram ($\mu\text{g}/\text{kg}$) wet weight).¹¹ In addition, 59% of wild fishes and 82% of caged fishes had methylmercury concentrations greater than 0.20 $\mu\text{g}/\text{g}$ wet weight, which is a threshold above which fish health is impaired.¹² Finally, 52% of caged fish and 26% of wild fish had fish tissue concentrations greater than observed thresholds that reduce bird reproduction¹³ and greater than the large fish tissue objective (intended to protect human health and wildlife consumers). These results suggest that increasing production, transport, and bioavailability of methylmercury through restoration actions could result in adverse effects to human health and the environment.

The Environmental Justice Chapter of the Draft EIS provides conflicting information and conclusions regarding whether or not the BDCP alternatives would create conditions conducive to increased bioaccumulation of mercury in Delta fish species, and whether such bioaccumulation would be cumulatively significant for increasing the body burden (pp. 28-22, 25, 103) in fish. The USGS Yolo

⁸ Analyses for subsequent alternatives refer back to the analysis for Alternative 1A.

⁹ Alpers, C.N., Fleck, J.A., Marvin-DiPasquale, M., Stricker, C.A., Stephenson, M., and Taylor, H.E., Mercury cycling in agricultural and managed wetlands, Yolo Bypass, California: Spatial and seasonal variations in water quality: Science of The Total Environment, Volume 484, 15 June 2014, Pages 276–287 <http://dx.doi.org/10.1016/j.scitotenv.2013.10.096>.

¹⁰ Ackerman, J. "Agricultural Wetlands as Potential Hotspots for mercury bioaccumulation: experimental evidence using caged fish" Environmental Science and Technology 2010, 44, 1451-1457.

¹¹ The Delta Mercury and Methylmercury TMDL contains two fish tissue objectives that target specific beneficial uses. The average methylmercury concentrations shall not exceed 0.08 and 0.24 mg methylmercury/kg, wet weight, in muscle tissue of trophic level 3 and 4 fish, respectively (150-500 mm total length). These objectives are protective of (a) people eating 32 g/day (eight ounces, uncooked fish per week) of commonly eaten, legal size fish, and (b) all wildlife species that eat large fish. Small fish (less than 50 mm in length) – 0.03 mg methylmercury/ kg, wet weight, in muscle. The average methylmercury concentrations shall not exceed 0.03 mg methylmercury/kg, wet weight, in whole fish less than 50 mm in length. Large fish (150 – 500 mm total length) – 0.08 and 0.24 mg methylmercury/ kg, wet weight, in muscle. These objectives target protection of sensitive wildlife that eat fish. http://www.swrcb.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2010-0043_res.pdf.

¹² Frayer, W. E.; Peters, D. D.; Pywell, H. R. Wetlands of the California Central Valley status and Trends: 1939 to mid-1980's; U.S. Department of the Interior, Fish and Wildlife Service: Washington, DC, 1989.

¹³ Albers, P. H.; Koterba, M. T.; Rossmann, R.; Link, W. A.; French, J. B.; Bennett, R. S.; Bauer, W. C. Effects of methylmercury on reproduction in American kestrels. Environ. Toxicol.Chem.2007, 26, 1856–1866; Burgess, N. M.; Meyer, M. W. Methylmercury exposure associated with reduced productivity in common loons. Ecotoxicology 2008, 17, 83–91, as cited in Ackerman, J. "Agricultural Wetlands as Potential Hotspots for mercury bioaccumulation: experimental evidence using caged fish" Environmental Science and Technology 2010, 44, 1451-1457.

Bypass bioaccumulation study referenced above showed that the majority of wild and caged fishes had methylmercury tissue levels above the public health threshold for trophic level 3 fish and very close to the public health threshold for trophic level 4 (large) fish. Although the Delta is posted with fish advisories, people who rely on fishing for subsistence may consume more than the advisory recommends. Although the Draft EIS acknowledges that “restoration actions are likely to result in increased production, mobilization, and bioavailability of methylmercury in the aquatic system” (p. 25-64), it concludes that there would be no adverse effects on public health to any populations (p. 25-64, p. 28-22). This conclusion is inconsistent with the potential for increased methylmercury production, bioaccumulation, and effects to Environmental Justice communities, and the proposed mitigation actions described do not address the potential for significant negative effects to human health.

Recommendations: *Acknowledge that particular areas may not be suitable for restoration or that the acreages of proposed restoration may need to be reduced if such areas prove to be large contributors of methylmercury to the Delta ecosystem.*

Summarize recent research and current literature relevant to the potential for methylmercury impairment under existing conditions and future conditions; the potential impacts on covered fishes that use the Yolo Bypass; and the potential for bioaccumulation impacts to higher order species and human health.

Describe the existing methods that show potential for reducing formation and transport of methylmercury, and the CMs to which they could be applied. Further describe the range of potential reductions that could be expected from CM12 methods for minimizing methylmercury formation and transport.

Reconcile the Draft EIS’s conflicting conclusions regarding the likely impact of the BDCP alternatives on the conditions conducive to bioaccumulation of methylmercury, and provide the basis for these conclusions.

Describe and commit to water column and fish and invertebrate tissue monitoring for mercury and methylmercury to support adaptive management actions. Include a commitment to ensure that adequate warning signs are posted in appropriate languages regarding the risks of consuming fish caught in the Delta, and provide further outreach to minority populations about these risks. Such outreach should include meaningful involvement by the affected populations.

D. Selenium

Soils on the west side of the San Joaquin Valley are high in selenium. As a result, it is present in agricultural drainage and enters the Delta in the San Joaquin River at Vernalis. When mobilized in the environment and transformed to organic, bioavailable forms, selenium is highly bioaccumulative and can be toxic to organisms at very low levels of chronic exposure. The BDCP proposes to bring additional reliable water to the west side of the San Joaquin Valley. This would result in a greater volume of water and greater loads of selenium being discharged to the San Joaquin River. Although available data show that the maximum selenium concentration at Vernalis is not exceeding the current water quality objective of 5 micrograms per liter ($\mu\text{g/L}$)¹⁴ (p. 8-96), the operations of the proposed project would contribute significantly more selenium-laden San Joaquin River water to the Delta (p. 8-226). In addition, EPA is in the process of updating its national recommended chronic aquatic life criterion for selenium in freshwater to reflect the latest scientific information, which indicates that toxicity to aquatic life is driven by dietary exposures. As of this writing, a peer review draft of the

¹⁴ 4-day average for above normal and wet year types and a monthly mean for dry and below normal water year types.

updated criterion is undergoing public review, with comments due to EPA in July 2014. Following consideration of comments received, the draft criterion will be revised, as appropriate, and released as a draft criterion for public review.

EPA is concerned that the potential effects of selenium on covered species, especially green sturgeon, are underestimated in the Draft EIS. The analysis discusses increased residence time of selenium in Suisun Bay and concludes that the impacts of the proposed restoration measures on green sturgeon are “not adverse”; but does not discuss the south Delta, which would receive increased loads of selenium under all CM1 alternatives (p. 11-526). The increased loads, combined with increased residence time, could lead to greater selenium absorption in clam tissue, which is a primary food item of sturgeon (p. 11-257). Adverse effects of elevated selenium on early life stages of green sturgeon have been documented¹⁵.

Likewise, impacts of increased selenium loads to salmonids are not adequately addressed in the Draft EIS. Although salmonids do not eat clams, they are sensitive in all their life stages (figure 12 in Presser, Luoma 2010).¹⁶ One objective of the San Joaquin River Restoration Project (SJRRP) is to manage the river to restore salmon migration. The increased drainage of selenium-enriched water from the West side of the San Joaquin Valley that would likely result from the BDCP could compromise this effort.

Recommendations: *To mitigate for the project’s impacts to selenium levels in the estuary as a result of the BDCP operations, consider reviving and funding the Bureau of Reclamation’s Land Retirement Program¹⁷ to remove from cultivation and irrigation large areas of selenium laden lands on the West side of the San Joaquin Valley. This would save irrigation water, reduce discharges of selenium into the San Joaquin River basin, and advance attainment of selenium reduction targets¹⁸ set by EPA and the Central Valley Regional Water Quality Control Board. Evaluate the extent to which restoration of these “retired” lands to the native plant community could also contribute to the recovery of threatened and endangered plants and animals listed by FWS. Consider analyzing the cost/benefit of implementing treatment technologies vs. land retirement. Although cost/benefit analyses are not required under NEPA, such an analysis may be useful to decision makers and the public in this case.*

Reanalyze the proposal to develop wetlands as part of the conservation plan, taking into account the increased amount of agricultural drainage water from selenium-enriched lands that would enter these areas in the Delta as a result of BDCP operations, and the potential for selenium build-up and availability.

Discuss hydrodynamics and increased residence time of selenium in the San Joaquin River in the southern Delta and its potential impact on clam uptake of selenium, bioaccumulation in sturgeon, and the potential for population effects.

Reference and summarize the available literature regarding the impacts of selenium on sturgeon, especially with respect to early life stages, and consider such impacts in the analysis of increased selenium loading.

The evaluation of the Alternatives should consider the objectives of ongoing or proposed projects and programs that are intended to improve Bay Delta water quality and fish and aquatic resources. Disclose

¹⁵ Linares, J., Linville, R. Eenennaam, JV, Doroshov, S. 2004 Selenium effects on health and reproduction of white sturgeon in the Sacramento-San Joaquin estuary. Final Report for Project No. ERP-02-P35.

¹⁶ Presser TS and Luoma SN 2010 Ecosystem-Scale Selenium Modeling in Support of Fish and Wildlife Criteria Development for the San Francisco Bay-Delta Estuary, California USGS Administrative Report.

¹⁷ <http://www.usbr.gov/mp/cvpia/3408h/index.html>

¹⁸ <http://www.gpo.gov/fdsys/pkg/FR-2000-05-18/html/00-11106.htm>

potential conflicts with such projects or programs, as well as ways in which such conflicts could be avoided or minimized. In particular, the potential for competing management objectives between the BDCP and the SJRRP should be comprehensively analyzed and described.

E. Additional Water Quality Impacts

The conclusion that there would be no impact to dissolved oxygen concentrations in reservoirs (p. 8-192, lines 6-15) is unsupported given that three major reservoirs are predicted to experience a 10% increase in dead pool under the No Action Alternative.

Recommendation: Describe how predicted dead pool conditions in reservoirs may impact dissolved oxygen concentrations and other contaminant concentrations that may increase in these extreme conditions, and revise the impact conclusions, as appropriate.

It is not clear whether residence time was considered in the impact assessment of water quality contaminants such as pesticides and metals. It appears that southern Delta residence times would increase due to increased use of the north Delta pumps (and decreased use of south Delta pumps), limiting freshwater inputs to, and movement of water in, the south Delta. These conditions could increase residence time of water moving through the southern Delta, which would increase aquatic life exposure to contaminants such as pesticides and selenium.

Recommendation: Explicitly state whether or not residence time was included in assessments of contaminant impacts on aquatic life and other beneficial uses in the water quality analysis. If residence time was not considered, explain why it was not included and how increasing residence time could increase negative effects of contaminants as a result of CM1 operations.

II. Fish and Aquatic Resources

A. Aquatic Resources Beneficial Uses

Data and other information provided in the Draft EIS indicate that that all CM1 alternatives may contribute to declining populations of Delta smelt, Longfin smelt, green sturgeon, and winter-run, spring-run, fall-run and late-fall run Chinook salmon. Impact analyses in Chapter 11 show that entrainment, rearing, and migration conditions for these species are estimated, for many of the action alternatives, to be similar to, or worse than, existing conditions and sometimes worse than the future no action condition. Some of the NEPA effects that are described as “not determined” for some alternatives are very similar to effects that are described as “adverse” for other alternatives. Data regarding the impacts on fish is provided in various tables, and the summary statements made in the text do not always accurately reflect the information in those tables.

1. Longfin Smelt Abundance

Long-term and recent sharp declines in fish abundance have been cited by the lead federal agencies, their partners, and EPA as evidence of collapse in the Bay Delta ecosystem. Longfin smelt relative abundance is estimated to decline for all but one of the CM1 alternatives in most water year types (and in the average of all water year types) when compared to *Existing Conditions*.¹⁹ Alternative 8 is the only alternative that has a predicted relative abundance increase for Longfin smelt relative to *Existing Conditions*. In comparison to the *No Action* Alternative, four CM1 alternatives are predicted to result in declines in the Longfin smelt abundance index, while five CM1 alternatives are predicted to result in positive changes to that index. Despite these predictions, the Draft EIS concludes that the

¹⁹ Table 11-1A-8 page 11-297 “Estimated differences between scenarios for longfin smelt relative abundance in FMWT or Bay Otter Trawl,” Table 11-2A-7 page 11-764, Table 11-3-7 page 11-1097, Table 11-4-8 page 11-1308; Table 11-5-7 page 11-1742; Table 11-6-8 page 11-1951; Table 11-7-7 page 11-2227, Table 11-8-8 page 11-2492; Table 11-9-8 page 11-2768.

impact on Longfin smelt abundance would be “not determined” for all CM1 alternatives for the NEPA effects determination. This conclusion disregards the predicted differences among the alternatives in comparison to the *No Action Alternative*, and the predominantly negative impacts in comparison to *Existing Conditions*.

2. Entrainment of Juvenile Delta Smelt

The summary table on page 11-55 of the Draft EIS states that Alternative 4’s flow-related effects on fish would lead to “beneficial impacts” with respect to entrainment of Delta smelt. While the prediction for Alternative 4 shows somewhat less entrainment in comparison to the No Action Alternative, the predicted difference is much smaller for juveniles than for adults, and Alternatives 1, 2, 7, and 8 are predicted to result in substantially less entrainment at all life stages. Compared to Existing Conditions, Alternative 4 is predicted to result in *increased* entrainment of Delta smelt, especially juveniles. It is unclear how increases in juvenile entrainment would result in overall beneficial impacts. Entrainment estimates provided in the Draft EIS show reductions in adult entrainment, but increases in juvenile entrainment for all Alternatives except Alternatives 7 and 8, compared to Existing Conditions, and for Alternatives 3 and 5, compared to the No Action Alternative. The discussion in the text provides the caveat that “entrainment is expected to remain at or below the levels currently experienced by fish... there are very few instances where there would be increases, but these are substantially offset by decreases during other periods” (p.11-53). The analysis does not describe the relative importance of reducing entrainment of each life stage (adult and juvenile) to the overall population. No comparison among alternatives is provided, nor does the Draft EIS explain why some alternatives, such as Alternatives 7 and 8, show much larger reductions than other alternatives in both juvenile and adult entrainment.

3. Impacts on Delta Smelt Rearing Conditions

The Draft EIS forecasts changes to rearing conditions for Delta smelt by estimating the change in available fall abiotic habitat with and without estimated habitat restoration benefits relative to the two baselines: Existing Conditions and No Action Alternative. CM1 alternatives with “Fall X2” operational criteria are predicted to increase fall rearing habitat relative to the No Action Alternative. These include CM1 Alternatives 2, 4 H4, and 5-9. Alternatives 6 (isolated facility, eliminates south Delta exports) and 7 (enhanced flows) show the highest predicted increases in fall rearing habitat. The absolute values of fall rearing habitat or significance thresholds are not provided.

***Recommendations:** Modify operational scenarios for CM1 alternatives to develop at least one alternative that would have more certain and beneficial effects on covered fish populations during all life stages.*

Present the predicted impacts to each of the covered fish species and impact categories (entrainment, spawning, rearing, migration), for all the alternatives and baselines in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision-makers and the public (40 CFR 1502.14).

Provide absolute value estimates and proportional changes, in addition to relative changes from baselines, for predictions under each CM1 Alternative.

Describe the scientific basis of, and uncertainty associated with, any assumptions made in the analysis, including in the development of the No Action Alternative. This may include, for example, data regarding current entrainment levels of all covered fish species at all life stages in all water year types.

B. NEPA Effects Determinations

The NEPA Effects Determinations provided in the Draft EIS are not always consistent with the impacts described. We list a few examples below.

- **Alternative 1 AQUA-5: Effects of Water Operations on Rearing Habitat for Delta Smelt:** The description of impacts reports a 22% loss of rearing habitat (p. 11-265), which suggests that the impact should be considered adverse if proposed habitat restoration does not produce anticipated benefits. Instead, Table 11-1A-SUM2 (page 11-16) lists the NEPA Effects Determination as “Not Determined.” The NEPA Effects discussion on page 11-265 does not explicitly state that the NEPA Conclusion is “not determined.”
Alternative 1 AQUA-21 Effects of Water Operations on Entrainment of Longfin Smelt: The description of impacts shows that entrainment is estimated to increase for juvenile Longfin smelt in dry (14%), below normal (46%), and above normal (33%) water year types (Table 11-1A-6), and the *Summary* text on page 11-295 states, “It is concluded that these changes in Longfin smelt entrainment would be adverse under Alternative 1A.” The subsequent *NEPA Effects* statement comes to a different conclusion, “The overall effect of the Alternative 1A operations scenario would not be adverse to Longfin smelt.” Table 11-1A-SUM2 also lists the NEPA conclusion for entrainment of Longfin smelt as “not adverse.”
- **Impact AQUA-22: Effects of Water Operations on Spawning, Egg Incubation, and Rearing Habitat for Longfin Smelt.** The NEPA Effects discussion predicts reductions of 8 to 10 percent in relative abundance of Longfin smelt for Alternative 1A, suggesting an adverse impact on this species from Alternative 1A. No NEPA conclusion is explicitly stated in this section (p. 11-295); however, Table 11-1A- SUM2 (page 11-16) lists the NEPA conclusion as “not determined.”

Furthermore, throughout the document, different NEPA Effects Determinations are provided for similar impact descriptions. For example, in the discussion of “Effects of Water Operations on Migration Conditions for Winter-Run Chinook Salmon”, the Draft EIS concludes that Alternatives 1 and 8 would have “adverse” NEPA Effects and Alternatives 7 and 4 would have “not determined” NEPA Effects, even though the estimated NEPA effects are quantitatively similar for the multiple metrics evaluated. It is not apparent how the lead agencies decided that one impact was beneficial and another adverse.

***Recommendations:** Describe the decision making process and decision rules used to make NEPA Effects Determinations from the analytical information presented for each impact category. Define the NEPA Effects Determinations and provide thresholds -- quantitative when possible -- for each category so that it is clear why some estimated impacts result in one NEPA Effects Determination over another. Explain whether all metrics are considered equal in the analysis or some are weighted. If negative impacts in one metric category translate into an adverse conclusion, regardless of the other metrics, this should be disclosed. Include summary tables for each impact category so that the reader can see the metrics and their results and how they compare among alternatives.*

Compare the NEPA Effects Determinations with the narrative text describing the metrics and NEPA Effects among all alternatives for each impact category (e.g., AQUA-42 above) to ensure that decision rules and methods are used consistently.

III. Analytical and Presentational Issues

A. Defining the Project Proposal

The proposed project evaluated in the Draft EIS is not fully defined. EPA is aware that interagency discussions with the project proponents regarding key aspects of the proposed project are ongoing. Many of the undefined aspects of the BDCP are fundamental to the potential environmental impacts of

the proposal. For example, it is EPA's understanding that potential agreement, in advance, to a certain range of exports is under consideration in the HCP discussions. While an Implementation Agreement has been released for public comment, it is incomplete and is still being discussed by the involved parties. The Implementation Agreement's financing and decision making elements are important for public disclosure because they affect the likely implementation and success of mitigation and environmentally beneficial activities, yet these effects are not described for public review in the DEIS.

In addition, given the large scale nature of the construction activities associated with the BDCP, "minor" changes in proposed project design or operation can make a significant difference in the potential environmental impacts.

Recommendation: Fully describe the proposed project and reasonable alternatives, including information that is integral to decisions that are being made about the proposed project design and operations.

The Draft EIS explains that the adaptive management program is a work in progress (p. 3D-9, BDCP p. 3.4-32). The specific approach for an adaptive management program and its effect on environmental consequences is a fundamental issue that should be addressed during the NEPA process. Given that species recovery depends largely on the success of the adaptive management program, it is essential that a more fully formulated adaptive management program be described in the EIS.

Recommendation: Describe the adaptive management program in detail, including clear objectives, explicit thresholds, alternative hypotheses, and designated responsible parties. In addition, explain any limitations imposed on the adaptive management program by the Implementation Agreement, and explain how those limitations affect the integrity of the adaptive management program.

B. Alternatives Analysis

The Draft EIS states that alternatives in the document are "evaluated at an equal level of detail, as required by NEPA" (p. 3-5); however, the lead federal agencies' Progress Assessments indicate that the operational components of the alternatives were subjected to different levels of analysis. For example, iterative modeling runs were conducted for Operational Scenario H (solely associated with the CEQA Preferred Alternative 4) that were not run for other Operational Scenarios.

The Draft EIS defines the Alternatives in terms of the design and capacity of the proposed conveyance structure. Each alternative is then paired with a particular operational scenario. EPA agreed with this organizational construct early in the BDCP process, expecting to see a range of alternatives that could present the environmental and water supply tradeoffs being considered. Instead, the DEIS focuses primarily on Alternative 4. It appears that the environmental impacts of certain other alternatives would be reduced if those alternatives were matched with more optimal operational criteria (for example, Alternative 5 with Operational Scenario F); however, the DEIS does not attempt to optimize the other alternatives for environmental and water supply benefits. Other reasonable alternatives could be developed by incorporating a suite of measures, including water conservation, levee maintenance, and decreased reliance on the Delta.²⁰ Such alternatives would be consistent with the purpose and need for the project, as well as with the California Bay-Delta Memorandum of Understanding among federal agencies²¹ and the Delta Reform Act of 2009.

²⁰ The "Portfolio Approach" developed by a diverse set of stakeholders is one attempt to place Delta water management into the larger context of facilities investments and integrated operations.

²¹ <http://www2.epa.gov/sites/production/files/documents/baydeltamousigned.pdf>

Recommendations: *Work with State and federal partners to modify and further analyze the proposed Operational Scenarios to improve the precision and utility of the aquatic life analyses for all the operational alternatives.*

If differences in the level of analysis remain among the Alternatives, disclose, and explain the reason for those differences.

Evaluate the environmental impacts of pairing each Alternative with more optimal operational criteria.

C. Comparison of Alternatives

The Draft EIS does not clearly present the alternatives and their respective environmental impacts in a clear and comparative manner. Because technical results are not synthesized and displayed in a comparative format, it is difficult for the reader to compare the predicted effects of CMI alternatives.

Further compounding the difficulty is the fact that the Draft EIS uses two very different baselines (Existing Conditions and No Action), pursuant to CEQA and NEPA regulations, and neither baseline is clearly defined. The assumptions that inform the baseline descriptions are spread throughout the document (Chapter 4, Appendix 4D, Appendix 5A, and Appendix 3A). Although Chapter 4 attempts to summarize the baselines, the summary is confusing, and references appendices that are hundreds of pages long. The baseline assumptions form the basis for all impact assessments; therefore, their lack of clarity creates an underlying uncertainty in the document's analyses and conclusions.

The Draft EIS considers many other types of uncertainties, including those related to long-term climate change and human behavior, however, the treatment of uncertainty is confusing and exhibits a strong tendency to assume outcomes favorable to the proposed project. Uncertainties are expressed by “non-determined” NEPA conclusions, but they are not explicitly detailed in the body of the Draft EIS. EPA has repeatedly raised concerns about the treatment of uncertainty in the Draft EIS, and the Delta Independent Science Board and an independent panel commissioned by the Delta Science Program recently expressed similar critiques.²² Notably, the Panel concluded that the Effects Analysis of the BDCP (as incorporated by reference into the EIS) is “fragmented in its presentation, inconsistent with its technical appendices, and... inadequately conveys the fully integrated assessment that is needed to draw conclusions on the Plan due to incomplete information.”

Recommendations: *Include, in the body of the document, summary tables comparing the effects of all CMI alternatives and the No Action Alternative to the applicable water quality standards and other relevant environmental impact indicators, and compare and contrast the alternatives with respect to one another in the text. This discussion should inform potential mitigation strategies by identifying which alternatives would need more or less mitigation to comply with environmental objectives. Clearly explain the underlying assumptions inherent in the baselines. We suggest that this be presented in Chapter 4.*

Explicitly acknowledge uncertainties encountered in the analyses, explain what has been or could be done to eliminate or reduce those uncertainties, and disclose any assumptions made in the face of uncertainties that could not be eliminated.

²² Delta Independent Science Board Review: <http://deltacouncil.ca.gov/sites/default/files/documents/files/Cover-letter-v.4.pdf>
Independent Science Panel Review: http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf

D. Scope of Impact Analysis

The scope of analysis in the Draft EIS does not fully consider upstream and downstream impacts of the proposed actions in the Delta. As evidenced by the intergovernmental response to California's ongoing drought, the state and federal water projects are functionally and physically interconnected. For example, actions that Central Valley Project (CVP) operators take from the Trinity River have implications for South of Delta CVP and SWP deliveries, and operational changes in the Delta require upstream adjustments in project operations. Based on EPA's ongoing discussions with the federal lead agencies, we understand that the U.S. Bureau of Reclamation is continuing to evaluate its broad operational response to the proposed changes in the Delta, for both near term and longer term operations. Upstream operational changes caused by BDCP implementation could have significant environmental and water supply impacts in the upstream areas, and these impacts must be disclosed in the DEIS. Similarly, the BDCP activities are expected to have impacts on downstream aquatic resources in San Pablo and San Francisco Bay, primarily by changing the magnitude and timing of outflow and by altering the mix of contaminant inputs from upstream (see discussion of selenium, above.)

***Recommendation:** Explicitly recognize the integrated nature of the watershed and the water supply projects operating in the watershed, and analyze the upstream and downstream impacts, in particular to water supply and aquatic resources.*

E. Integrated Water Management

The BDCP effort has been ongoing since 2006. Initially, its broad goals were (a) the preparation of an HCP for continued operation of the state and federal water projects, and (b) a change in the mode of conveyance of export water through the Delta. As evidenced by the Alternatives Screening Criteria, as well as Water Supply Chapter 5 of the Draft EIS, there is now also a strong water supply *enhancement* component to the BDCP. That is, the project proponents appear to be anticipating that the CEQA Preferred Alternative 4 of the BDCP would result in the same or greater water exports (ranging from a decrease of 1% to an increase of 18%) than would be available in the absence of the BDCP (Table 5-9). Since the goals of a project drive the scope of the alternatives that must be evaluated in the NEPA process (as well as in the subsequent CWA Section 404 permitting process), EPA believes that a more robust discussion and evaluation of the water supply component of this project is warranted in the EIS.

California is moving quickly towards integrated water management, yet it is not clear how, as currently drafted, the BDCP conveyance component is consistent with this approach. Although the Draft EIS acknowledges California's progress in Demand Management in Appendix 1C, demand management is not incorporated into the project alternatives. Alternatives, such as the Portfolio Alternative, that proposed a more comprehensive and integrated approach to meeting the stated dual goals of the BDCP, were not evaluated.

***Recommendations:** Explain how the proposed changes in conveyance and exports fit within the larger integrated water management plan for California. Include a more comprehensive consideration of, and response to, suggested alternatives such as the "Portfolio Alternative" and discuss the demand scenario driving the Delta export facilities. Include a consideration of the significant water conservation efforts Statewide and in the export areas.*

F. Habitat Restoration

We are concerned that the analysis assumes a 100 percent success rate for habitat restoration, which is not consistent with our experience, or supported by restoration ecology and conservation biology academic literature and scientific investigation. The potential adverse impacts of CM1 operations would be greater than projected in the DEIS in the likely event that restoration of the Bay Delta ecosystem is not 100 percent successful.

Recommendations: Discuss restoration methods, performance metrics, and documented success rates for each habitat restoration type proposed.

Work with the federal and state wildlife agencies to develop analytical methods to evaluate gradients of partial success for each habitat type. Re-evaluate the impacts of each Alternative (CMs2-11) in light of these gradients and the likely success rates for each habitat restoration type. Incorporate the results into final conclusions about the impacts of BDCP alternatives.

G. Aquatic Species Recovery

Although not explicitly stated in the Draft EIS, the primary premise of the BDCP appears to be the hypothesis that endangered and threatened fish populations in the San Francisco Estuary can be protected from further degradation by habitat restoration without increasing freshwater flow to the Estuary. As noted in the Executive Summary, restoration of more than 150,000 acres of habitat is proposed under most BDCP alternatives. Only moderate changes in freshwater flows (Delta outflow) to the Estuary are proposed under any of the alternatives. In particular, all sub-alternatives for CEQA Preferred Alternative 4) would result in less Delta outflow compared to the No Action Alternative (DEIS Table 5-9).

The habitat restoration-only premise is inconsistent with broad scientific agreement, reflected in EPA's Delta Action Plan²³, that existing freshwater flow conditions in the San Francisco Estuary are insufficient to protect the aquatic 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 native and migratory fish populations.²⁴

The Draft EIS acknowledges the importance of freshwater flow to fish species abundance, but is inconsistent in describing its analyses of the benefits of habitat restoration versus increased freshwater flow. For example, page 11-202, lines 24 to 28 state that "although it is recognized that there are statistically significant correlations between freshwater flow and abundances of several fish species (e.g., Kimmerer 2002, FWS 2005), these correlations were not used in the EIR/EIS analysis to estimate fish population responses to alternatives because they do not directly include the effects of tidal marsh and floodplain restoration on fish populations." Elsewhere (e.g., p. 11-297), the document states that the Kimmerer 2002 model *was* used for the analysis. Correlations that do not include the effects of restoration were rejected for some analyses, but not for others.

Recommendation: *A consistent approach that recognizes the demonstrated significant correlations between freshwater flow and fish species abundance should be used to analyze all of the Alternatives. Describe the analytical approach and provide the rationale for, and implications of, any deviations from it.*

²³ <http://www2.epa.gov/sites/production/files/documents/actionplan.pdf>

²⁴ This broad scientific agreement is illustrated in the following reports: (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) 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

H. Project-level Decision-making

The Draft EIS indicates that it provides a *project level* analysis of the proposed changes in conveyance (CM1) and a *programmatic* analysis of other BDCP elements. The level of engineering detail provided for the tunnels is not commensurate with the level of site-specific information typically provided in an EIS for a project that would require federal permits. For example, actions that would result in impacts to aquatic resources (e.g., grading, dredging, trench and fill, boring, spoils piling, levee work, excavation, etc.) are not detailed or quantified at a project-level of detail (e.g., limited information is provided regarding acres and/or linear feet of estimated impacts to waters of the US, the volume of sediment proposed for disposal sites, or the size and length of intakes, p. 3-92; 3C-3). Where reusable tunnel material sites are estimated for the pipelines and the forebays, they are estimated only for the preferred alternative and “may” be on the order of thousands of acres (p. 3-96). We do not believe the information provided in the Draft EIS is adequate to support a full assessment of the project-level impacts and mitigation opportunities, or to determine whether the project, as proposed, would satisfy requirements for requisite authorizations and permits. Given the lack of project-level information, EPA agrees with the Corps that supplemental NEPA review will be needed before a section 404 permit or CWA section 408 “Letters of Permission” could be issued.²⁵

The use of programmatic inputs to project-level analyses in the Draft EIS also substantially limited the predictive power of evaluations that were intended to provide project-level precision. For example, Section 8.4.1.7 “Constituent-Specific Considerations Used in the Assessment” states that the modeling to predict water quality effects (salinity) of CM1 operational scenarios relied on estimates of impacts from implementation of other conservation measures, specifically CM2 (Yolo Bypass Floodplain Restoration) and CM4 (tidal marsh restoration), which are evaluated in the Draft EIS at a programmatic level (p. 8-153). A representative estimate of the location and amount of tidal marsh restoration was used to predict water quality effects under each CM1 operational scenario. The programmatic nature of the CM4 input, which is based on an assumed 100 percent success rate, represents only one potential future configuration of tidal marsh restoration. The actual success rate and physical location(s) of tidal marsh restoration will have varying impacts on water quality elements such as salinity. The representative locations and amounts of CM4 and CM2 that were used for CM1 water supply modeling were not disclosed in the Draft EIS, nor has any feasibility analyses been cited that describes the availability of suitable sites in the restoration opportunity areas. The uncertainties introduced by the use of CM4 programmatic estimates raises concerns over the reliability of water quality modeling results, and whether the analysis presented in the Draft EIS is sufficient to support federal permit decisions.

Despite the substantial impact that the physical location of tidal marsh habitat restoration may have on water quality elements such as salinity, the Draft EIS does not describe how the locations for CM4 estimates were chosen or how likely it is that CM4 would result in the targeted amount of restoration (65,000 acres). A tidal marsh restoration success rate of less than 100 percent may yield very different results for predicted salinity values under each CM1 operational scenario. Typical success rates for wetland restoration have been reported to be substantially lower, e.g., on the order of 20-60 percent, and full restoration may require decades²⁶, yet this underlying uncertainty associated with the predicted salinity values is not characterized in the Draft EIS.

The envisioned CM-1 tunnels would require one of the largest construction projects in the nation, which would occur in the upper portion of a sensitive estuary. The proposed structure includes elements (e.g.,

²⁵ See Corps comments on the Draft EIS July 16, 2014 and July 29, 2014

²⁶ J.L. Lockwood and S.L. Pimm (1999), When Does Restoration Succeed? (Chapter 13 in *Ecological Assembly Rule: Perspectives, Advances, and Retreats*; and Angel Borja & Daniel M. Dauer & Michael Elliott & Charles A. Simenstad (2010) *Medium- and Long-term Recovery of Estuarine and Coastal Ecosystems: Patterns, Rates and Restoration Effectiveness*, *Estuaries and Coasts* (2010) 33:1249-1260.

intake facilities and fish screens) that have never been constructed in the Sacramento River at this scale, yet the Draft EIS provides only a qualitative analysis of construction-related water quality impacts. This is inconsistent with the intent of the Draft EIS to support project-level decision making, which necessitates project-level analysis. Assessment of construction-related impacts is a basic element of project-level analysis, yet the Draft EIS provides no quantitative estimates of the amounts of soil, sediment, and contaminants that would be discharged to water bodies during CM1 construction, nor a rationale for not including such estimates. The qualitative description of best management practices does not provide an adequate basis for a lead federal agency to write permit conditions that would be effective in minimizing the water quality impacts of constructing CM1.

Additionally, on page 8-293, in lines 35 to 38, the Draft EIS states that “Alternative 1A would result in similar potential contaminant discharges to water bodies and associated water quality effects to those discussed above for the no action alternative.” It is not clear how the impacts on water quality from construction-related activities of building a 35-mile twin tunnel facility, with 5 screened on-bank intakes, would be the same as not building it.

Recommendations: *Provide quantitative information regarding project footprints and estimates of soil, sediment and contaminant discharges during construction, as well as the impacts of those discharges and measures that would mitigate those impacts.*

Provide the level of detailed information necessary to support project-level analyses and permit and authorization decision making, or specify and commit to the additional detailed work and appropriate supplemental NEPA analysis that will need to be done prior to project-level decision making.

Provide confidence intervals around predicted water quality effects of CM1 operational scenarios. Describe the methods used to identify tidal marsh habitat locations for estimating water supply effects of CM1 operational scenarios, and explain the reasons for choosing these locations. Disclose the tidal marsh habitat locations that were used to estimate water supply effects of CM1 operational scenarios. Evaluate water supply effects of CM1 scenarios using several configurations and success rates of CM4 and disclose methods and results.

Provide a summary of tidal marsh habitat success rates reported in academic literature and restoration industry reporting. Include a description of elements that drive restoration success, including location characteristics and restoration actions.

Describe the locations in Restoration Opportunity Areas that exhibit the location characteristics that optimize restoration success, would provide salinity gradient habitat benefits for pelagic native fishes and would protect municipal water supply intakes.

I. Energy Infrastructure

The Draft EIS indicates that DWR will conduct a five-to-seven year Systems Impact Study (SIS) to evaluate the electrical transmission and power needed for conveyance facilities (p. 21-22). This study is projected to be completed in time to procure the necessary power to support construction and operation of the facilities. Based on the Draft EIS, it is not clear whether the SIS could affect the conclusions summarized in the EIS, of the energy needed for the system (Table 21-11 p. 21-34) or to what extent it may influence the procurement and placement of future transmission and associated infrastructure.

Recommendations: *Provide additional details on the purpose of the SIS and how it may affect the assessment of the BDCP’s energy needs as well as the procurement and placement of future transmission and associated infrastructure.*

In the absence of the SIS, disclose the assumptions made regarding electrical transmission placement and energy needs for the proposed conveyance facilities and whether the SIS could affect the analysis of environmental impacts.

Clarify, particularly with respect to impacts on terrestrial species, the level of uncertainty involved with future placement, and associated impacts, of the transmission line and related infrastructure pending the completion of the SIS.

Discuss whether the SIS would provide an opportunity to focus procurement of a guaranteed source of 100% renewable energy (e.g., contractually binding agreement) for the BDCP.

J. No Action Alternative

The No Action Alternative assumes that no BDCP actions would be undertaken, and that climate change and sea level rise would occur and water demands and diversions north and south of the Delta would increase, resulting in reduced freshwater flows into the Delta (p. 5-57). Under the No Action Alternative described in the Draft EIS, no action would be taken in response to the impacts of climate change and sea level rise on the Delta.

EPA supports the Draft EIS's recognition that climate change and sea level rise would likely result in decreased freshwater flows into and through the Delta and increased salinity intrusion; however, the assumption that, in the face of diminished overall water supply due to climate change, diversions north of the Delta would be allowed to increase seems unrealistic. Similarly, maintaining existing reservoir operations and meeting existing water supply demands is unlikely with the predicted effects of sea level rise and climate change. Comparing the CM1 alternatives to a "No Action" Alternative that assumes that no actions would be taken by *any* party to address climate change-induced reductions in overall water availability has the potential effect of exaggerating the benefits of the CM1 alternatives to the project proponents.

The Draft EIS appears to contradict itself by stating that some of the water supply delivery differences between CM1 alternatives and the No Action Alternative in the year 2060 are "*solely* attributable to sea level rise and climate change, and not to the operational scenarios themselves (emphasis added, p. 5-47, lines 20-23)." This overlooks the significant impact of the CM1 project operational scenarios, which propose exporting volumes of water approximately equal to, or greater than, those exported under existing conditions, regardless of overall water availability. In a future affected by climate change and sea level rise, with less fresh water to allocate among all water users, exports of such magnitude would further reduce water availability for other uses and users.

Recommendations: *Consider and incorporate into the No Action Alternative predictable actions by other parties to address the anticipated effects of increased north of Delta demands, climate change, and sea level rise on water availability. This should include consideration of any measures that would likely be taken to reduce demands both north and south of the Delta.*

Clarify that the comparisons of CM1 alternatives to the No Action Alternative isolate the effects that would be attributable to CM1, and that such effects would occur in the context of increased north of Delta demands, sea level rise, and climate change, not "in the absence of" the effects of those stressors.

K. Impacts to Wetlands

At this time, no Clean Water Act (CWA) Section 404 permit application has been submitted for discharges of dredged or fill material into waters of the United States, including wetlands, associated

with projects described in the BDCP. EPA and the Corps encourage lead agencies to proactively integrate CWA Section 404 regulatory requirements into the NEPA process to streamline environmental review by using NEPA documents for multiple permitting processes. With this in mind, EPA and the Corps met with the lead and federal state agencies multiple times over the past several years in the interest of using the BDCP EIS/EIR to inform Corps' CWA 404 regulatory decisions. Although constructive and informative, those meetings did not result in an agreement to coordinate the NEPA and CWA 404 permit reviews.

Information provided in the Draft EIS and through meetings with the lead agencies illustrate that there are substantial challenges to finding that discharges associated with Alternative CM1 are consistent with the CWA Section 404(b)(1) Guidelines. In addition, the Draft EIS acknowledges that additional analyses for NEPA may be required to support Corps CWA Section 404 permit decisions for CM1 and that additional NEPA work will be done for other conservation measures (p.1-13). The Corps also submitted comments on the Draft EIS verifying that the Draft EIS does not provide the site-specific information necessary to form the basis for a permit decision, and we agree with that comment.²⁷

Recommendation: *Demonstrate that the proposed project would meet the requirements for a CWA section 404 permit.*

Wetland Extent and Jurisdiction (Section 12.3.4)

The accuracy of the CWA jurisdictional determination and estimates of impacts to jurisdictional waters need to be improved for project-level analysis. The Draft EIS is intended to provide project-level information for CM1. However, the BDCP applicants were not able to conduct field delineations of wetlands and waters of the U.S. Instead the extent of wetlands and other waters in the study area was determined primarily using aerial photography interpretation in a GIS with limited (26 sites) field delineations (p. 12-146). However, the Draft EIS does not provide an estimate of GIS-based mapping accuracy as compared to the on-the-ground mapping. The Draft EIS also states that the extent of impacts to jurisdictional wetlands and other waters is likely an overestimate because actual construction footprints will be smaller than presented in the document and because some mapped wetlands and waters could be non-jurisdictional (p. 12-147). However, in some areas, when compared for other projects (e.g., Delta Wetlands project EIS) the extent of potential wetlands and waters mapped for BDCP is substantially lower. While the extent of ground disturbance may be overestimated in the document, it is likely that the extent of wetlands and waters have been substantially underestimated.

Recommendations: *In Section 12.3.2.4, clearly describe how the GIS-based mapping compared to the field delineations and provide an estimate of GIS mapping accuracy. Use available approved wetland delineations from other projects to supplement the GIS mapping.*

Identify a schedule for improving delineation methods completing wetland delineations on sites where DWR has access or can reasonably obtain access. Estimate direct fill impacts and secondary effects to waters using engineering drawings and cross sections.

L. Air Quality Impacts

General Conformity

The Draft EIS discloses that this project would generate emissions within multiple air basins that are federally designated as nonattainment for ozone, PM_{2.5} (particulate matter smaller than 2.5 microns), and/or PM₁₀ (particulate matter smaller than 10 microns); as well as designated maintenance areas for

²⁷ See Corps comments on the Draft EIS July 16, 2014 and July 29, 2014

carbon monoxide (CO; p. 22-13, Table 22-4). The Draft EIS states that general conformity to the State Implementation Plan (SIP), with regard to all of these pollutants except CO, would be demonstrated through the use of a combination of mitigation measures and the purchase of offsets. For CO, conformity would need to be demonstrated through the use of local air quality modeling analyses (i.e., dispersion modeling).

The availability of sufficient offsets to demonstrate conformity for the BDCP may be limited. EPA is aware that other construction projects scheduled to take place in the BDCP project area during the BDCP's proposed construction time frame also include the purchase of offsets to demonstrate conformity. For example, two segments of the California High Speed Rail project scheduled to be constructed in the San Joaquin Valley Air District are currently pursuing a significant amount of offsets for several criteria pollutants.

The Draft EIS is not clear as to whether the federal lead agencies have made a general conformity determination. To the extent there is information regarding conformity, the Draft EIS also appears to rely on qualitative, not quantitative information. EPA interprets the general conformity rule as including all direct and indirect emissions from the federal action; therefore, the emissions from all conservation measures required as part of this federal action should be quantified and evaluated in the general conformity determination.

Recommendation: *Demonstrate that all direct and indirect emissions of the federal action, including all required conservation measures, would conform to the applicable SIPs and not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS).*

Continue to work closely with the local air districts to secure legally binding offset agreements and complete the general conformity determinations.

Include the Draft General Conformity Determination either as a detailed summary or as an appendix, and the previously referenced "Conformity Letters."

IV. Additional Issues

A. Alternatives

The reason for including maximum pumping capacity (10,600 cfs) for the State Water Project's Banks Pumping Plant in all CM1 alternatives that include north Delta intakes is not clear. The existing pumping restriction for Banks Pumping Plant for the gates of Clifton Court Forebay is intended to minimize erosive forces. Section 5.2.1.3 refers to the Corps of Engineers' Public Notice for the Bank Pumping Plant, which states that that additional permitting for the SWP's diversions would not be required so long as the SWP did not exceed a diversion of 13,250 acre feet (daily and 3-day running average). It is not clear that the Corps' goal of minimizing erosion would be met by full pumping capacity operation.

Recommendations: *Describe the Corps of Engineers' pumping restriction for the Banks Pumping Plant. Describe the circumstances under which the Banks pumping plant would be able to pump at maximum capacity, and why erosion would no longer be a significant effect from pumping.*

The description of CM2 (Yolo Bypass fisheries enhancement) in Section 3.6.2.1 (p. 3-122) does not contain information about the amount and location of planned restoration activities, disclosure of targeted flood frequency, or a description of how CM2 differs from what is already required of the Bureau of Reclamation by the 2009 NMFS Biological Opinion, Section I.6.1 (page 34 in the 2009

Biological Opinion with 2011 amendments). That Biological Opinion requires Reclamation to “provide significantly increased acreage of seasonal floodplain rearing habitat, with biologically appropriate durations and magnitudes, from December through April, in the lower Sacramento River basin, on a return rate of approximately one to three years, depending on water year type.” The Biological Opinion indicates that the amount of floodplain restoration should range between 17,000-20,000 acres (excluding tidally-influenced areas), with appropriate frequency and duration.

It is EPA's understanding that CM2 is evaluated programmatically and subsequent NEPA document(s) will further define aspects of this alternative. Indeed, the Bureau has already collected scoping comments for the development of an EIS specific to CM2. It is not clear how programmatic information from this Conservation Measure was used to inform project-level impact determinations for Chapter 5 through Chapter 11 in the current Draft EIS.

Recommendations: *Provide additional available information about the planning of CM2, including floodplain acreages, frequency and duration of estimated inundation, and maps of potential locations of restoration sites.*

Summarize the potential overlap between CM2 and Section I.6.1 of the 2009 Biological Opinion so that the reader is informed about the existing requirements under Section 7 of ESA and how actions taken or proposed pursuant to the Biological Opinion may be modified by the BDCP.

Indicate whether additional water would be needed to flood the Yolo Bypass and, if so, where the water would come from.

Explain how programmatic information drawn from this Conservation Measure was used to inform project-level impact conclusions for water supply and water quality.

Recent floodplain habitat loss over the last few decades is listed as one of the reasons for proposing CM2, however, floodplain habitat loss has been occurring for more than a few decades.

Recommendations: *Provide a broader description of long-term floodplain habitat loss over a 100 year timeframe and describe how it has affected fisheries populations, with appropriate citations.*

It does not appear that a feasibility analysis was conducted to determine the availability of lands for restoration within the Restoration Opportunity Areas for CMs 2, 4-11. We understand that much of this information is confidential; however, there are multiple other draft HCP efforts moving forward that overlap with the project area, creating the potential for restoration planning conflicts on the same parcel of land.

Recommendation: *Conduct an analysis of areas that support each type of proposed habitat restoration in each of the Restoration Opportunity Areas and develop criteria for prioritizing acquisition based on potential restoration success and availability. Consider the other draft HCP efforts that overlap or are immediately adjacent to the project area to identify potential conflicts on restoration areas.*

The Draft EIS does not include a comprehensive description of the CVP and SWP with and without new north Delta intake facilities or through-Delta operations. Such information is needed to assist the reader in understanding how the water delivery system operates under Existing Conditions and how it would change under CM1 alternatives.

Recommendation: *Include a description of existing CVP and SWP operations in the Chapter 3 discussion of the No Action alternative, including how operations would change or remain static under each proposed alternative.*

The North Delta Bypass rules are difficult to understand and should be more clearly explained, particularly in the context of how flows occur currently (p. 3-181-3-209). Listing the rules does not enable the reader to understand how the new facilities would operate within the CVP and SWP system and, subsequently, how the new rules could modify the Sacramento River where new intakes would be placed and operated.

Section 3.6.4.2 provides only an annual average of how often the north Delta intakes would be used versus the south Delta intakes. For the reader to understand how the system would work, information about the potential timing, frequency, and duration of operation of each of the pumps throughout the year would be more useful.

Recommendations: *Provide information and references that describe current CVP and SWP operations. Describe modifications to reservoir operations to avoid dead pool conditions for all alternatives.*

Clearly state that BDCP's North Delta Bypass rules are intended to protect flows from only one storm pulse or, potentially, two storm pulses if the first storm arrives before December 1st. Explain that subsequent storm pulses (that are important fish cues for migration) can be exported after BDCP's new operational rules have been met.

Provide information about the potential timing, frequency, and duration of operation of each of the pumps throughout the year, including when and the conditions under which each pump would be used alone or simultaneously with the other.

Provide information about Sacramento River flows to put the North Delta Bypass rules in context. For example, describe how often flows are at the levels used as thresholds in the bypass rules to help the reader to generally understand how much flow would remain in the river versus be diverted into the new intakes. Also provide exceedance curves of Sacramento River flows and the Post Pulse Water Operations for each CM1 alternative, and consider including a chart that summarizes information in Table 3-16 (p. 3-183) describing Post Pulse Water Operations, and include Sacramento River flows for comparison.

The Export/Import ratio (also known as Export Limits in Table 3 of the Water Quality Control Plan) does not necessarily solely apply to the south Delta or explicitly exclude new points of diversion. The description of how the export/import ratio from the 1995 Bay-Delta WQCP is included in operational requirements and impacts from the CM1 alternatives (p. 3-32) may not be consistent with the description of the E/I ratio as interpreted by NMFS.²⁸

Recommendation: *Describe how the E/I ratio was used in evaluations of each operational scenario for the alternatives. If the approach ultimately used in the analysis differs from the D-1641 approach, explain the reason(s) for, and implications of, using the different approach.*

²⁸ See NMFS Progress Assessment p. 10

http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/NMFS_Progress_Assessment_Regarding_the_BDCP_Administrative_Draft_4-11-13.sflb.ashx

State whether or not project proponents will request that the State Water Board modify the existing E/I water quality standard so it does not apply to the north Delta intakes and describe the process for having that modification approved.

Information that provides context for the Fremont Weir and Yolo Bypass Operational Criteria should be provided in the section that generally describes these operational criteria (p. 3-187). In the absence of context, it is unclear how the rules would change. For example, with no information about how often Sacramento River flows at Freeport are expected to be greater than 25,000 cfs, it is unclear how often the 17.5 and 11.5-foot elevation gates would be open and how often the Yolo Bypass floodplain restoration work would provide benefits to aquatic life using these resources.

Recommendations: *Provide cumulative distribution curves that show expected flows at Freeport under each CM1 alternative for each type of water year. Discuss the curves in the text and identify the median frequency at which Sacramento River flows at Freeport are expected to be greater than 25,000 cfs.*

Provide maps showing Yolo Bypass inundation of 3,000 to 6,000 cfs.

The Fremont Weir is described as a necessary component of CM1; however, the Draft EIS states that “CM2 is a programmatic element that will be further developed and analyzed in future technical and environmental reviews.” The impacts associated with this element are not estimated and disclosed in the Draft EIS. For example, although Fremont Weir gate operational rules were developed for the purposes of modeling, the impacts of the proposed operation of the Fremont Weir do not appear to have been analyzed. Without such analysis, the impacts of CM1 cannot be fully evaluated.

Recommendation: *Describe the updates to Fremont Weir that would take place under all of the Alternatives.*

The Rio Vista Minimum Instream Flow Criteria shown on p. 3-188 are substantially different from the Rio Vista flow criteria in the 2006 Bay-Delta WQCP, which are implemented through water right permit D-1641. It is not clear how the BDCP process would result in a change to the Bay-Delta WQCP water quality standards and the water right permit.

Recommendations: *Describe the Rio Vista flow criteria in the 2006 Bay-Delta WQCP and the D-1641 permit requirements. Describe the difference in flows proposed by the BDCP and explain how they would be attained.*

If it is anticipated that water quality standards would be modified subject to a request connected to the implementation of BDCP, describe the process by which the modification would be requested and processed by the State Water Board.

The discussion in Section 5.2.2.2 “The Revised Water Quality Control Plan (2006)” does not reflect substantial work the State Water Board has completed or undertaken relevant to the 2006 Bay Delta WQCP, including the 2009 Triennial Review and its conclusions, the 2010 Flow Criteria Report, and the Phase I and Phase II Updates to the 2006 Bay-Delta WQCP. These updates include potential modifications to San Joaquin River tributary and lower San Joaquin River flows, Delta outflow objectives, export/inflow objectives, Delta Cross Channel Gate closure objectives, Suisun Marsh objectives, potential new reverse flow objectives for Old and Middle Rivers and potential new floodplain habitat flow objectives. Under recent state legislation, the State Water Board will also be evaluating changes to outflow requirements for major Delta tributaries. Although the outcome of these

State Water Board regulatory processes is unknown at this time, it is reasonable to expect that all will have significant impacts on BDCP planning and implementation.

Recommendation: *Summarize the current status of the State Water Board's update to flow objectives, including export limits and minimum Delta outflows. Updated objectives should be considered in the impacts analyses, and the document should describe how any proposed or pending updates to flow standards may affect the analyses and the implementation of the BDCP. Describe the mechanisms that would be in place in the BDCP, the Implementation Agreement or other BDCP agreements to assure implementation of future SWRCB water quality and water rights actions.*

B. Water Supply

We are concerned that the “Overview of California Water Demand” discussion in Section 5.1.1.3 provides an incomplete summary of water demand in California. For example, population growth is discussed as a reason for increasing urban water demand (p. 5-4); however, there is no reference to the statewide mandate to increase water efficiency 20% by the year 2020 for urban water uses, which is discussed in appendices to other chapters. Details are not provided regarding the rate of urban water demand growth or estimated urban water demand and use, and no basis other than population growth is provided for the conclusion that water demands will increase. Similarly, the importance of water to the agricultural economy is discussed (p. 5-4); however, there is no discussion about the importance of water to other economic sectors.

Municipal and industrial (M & I) demand north of the Delta was estimated by assuming full build out of facilities associated with water rights and contracts north of the Delta, primarily to meet projections of increasing urban water demand (p. 5-57). It is not clear whether the 81% estimated increase under the No Action Alternative, compared to Existing Conditions, takes into consideration the required water efficiency efforts for municipal and industrial water use (see table 5-8). This is important because “increased system demands by water rights holders, especially in El Dorado, Placer, and Sacramento counties” is identified as a reason for projected decreases in reservoir storage and CVP and SWP deliveries under the No Action Alternative (p. 5-61 through 5-64). An overestimation of M & I demand would result in exaggerated projected decreases in water availability for those other uses.

Recommendations: *Modify Table 5-1 to include sectors of consumptive water use, average water use in each category, and estimated rates of growth in each category.*

Summarize the information in Table 5-1 in the text of Section 5.1.1.3.

Provide an overview of water demand in California that summarizes water use by sector (e.g., urban, agricultural, industrial), discloses the economic value generated by each sector, and estimate the rates of water demand growth in each sector.

Clarify whether or not the 2010 urban water efficiency mandate of a 20% reduction in M & I water use by 2020 is included in estimates of future water demand. If it is not included in water demand estimates, explain why it is excluded in the context of the potential impact of overestimating demand on BDCP estimates of water supply effects.

Evaluate water supply effects of CMI scenarios using several configurations and success rates of CM4, and disclose methods and results.

C. Groundwater

The Draft EIS describes beneficial impacts on groundwater resources for some alternatives as a result of CM1 (p. 7-54). It states that for all alternatives, increases in surface water supplies as a result of BDCP would result in diminished use of groundwater (p.7-84); however, no documentation is provided to support this assumption.

The Draft EIS states that groundwater use in the San Joaquin River area is estimated to be between 730,000 and 800,000 acre-feet per year, which exceeds the basin's estimated safe yield of 618,000 acre-feet per year and that each groundwater basin has experienced some overdraft (p.7-18). The Draft EIS also states that the estimated overdraft is between 1 and 2 million acre-feet annually, with many basins in Tulare Lake Basin in critical condition (p.5-4). The Draft EIS assumes that these overdrafts would stop after implementation of the BDCP. On the contrary, we believe it is reasonable to expect that provision of more water could result in more water being used, including as much groundwater as allowed, rather than in strict substitution of surface water for groundwater. Without management of groundwater resources, it is not clear that the pressure on groundwater resources would be diminished as a result of the BDCP.

***Recommendations:** Explain the basis for the assumption that increases in surface water supplies would result in diminished use of groundwater. The likelihood and potential impacts of increased use of surface water supplies for aquifer storage and recovery should be discussed.*

Consider development of a mitigation measure to address management of groundwater resources in the southern San Joaquin Valley.

D. Water Quality

Reporting methods for the chloride and EC analyses may partially obscure conclusions about the predicted range of salinity intrusion, chloride, and EC concentrations for existing conditions, the No Action Alternative, and CM1 alternatives. The chloride modeling analysis (Appendix 8G) provides a 16-year average of estimated chloride concentrations, a 5-year drought average chloride concentration, and a percent exceedence of the minimum health objective of 250 mg/L chloride. Combining 16 years of water quality data and reporting the average omits the predicted range of maximum mean daily chloride concentrations predicted for each of the compliance points under various alternatives compared to their baselines. Averages can mask the severity of chloride and EC concentrations by allowing wet years with lower salinity (chloride and EC) levels to balance dry years with higher salinity concentrations. The 5-year drought average provides some indication for time periods when increased salinity concentrations are expected; however, elevated EC and chloride concentrations at certain compliance points may also occur in above normal and below normal years following dry years.

The reason for, and consequences of, constraining the water quality analysis by using a 16-year hydrology modeling period is not described in the Draft EIS nor its appendices. The 16-year hydrology period extends from 1975 to 1991 and includes a drought period and the highest water year recorded in recent decades (1982). If this hydrology period is different than other periods that could have been chosen or the entire 82-year period available for modeling, results of the water quality analysis may be inaccurate.

***Recommendation:** Explain why the 16-year period was used and the 82-year period was not used, and describe the potential impacts on the precision of the water quality effects predicted by the modeling exercise reported in the Draft EIS Chapter 8 appendices and summarized in the text of the Draft EIS. Compare the 16-year hydrology period (1975-1991) to the entire hydrology period available, disclose*

that comparison to the public and decision-makers, and explain how the smaller time period may influence water quality predictions.

The assertion that water demand will go down in the Tulare basin, in the face of large increases in population, is not thoroughly supported (p. 30-31). This is stated to be the expected result of a decrease in agriculture (now using 82% of the water p. 30-32), but it is not a given that the acreage in agriculture would decrease when additional water resources become available as a result of BDCP. Rather, increases in both population and agriculture are plausible.

Recommendations: *Include a discussion of growth that considers the potential for increases in both urbanization and agricultural development in response to increased reliable water supplies, and that addresses the entire San Joaquin Valley. Include an explanation of why additional water resources are needed (p. 5-4) if projected urbanization would use less water (p. 30-11).*

Water Quality Impact Conclusion WQ-26 (effects on selenium concentrations resulting from restoration activities) lists impacts before mitigation, as “Less Than Significant.” After mitigation, conclusions are “Less Than Significant” and “Not Adverse.” Analysis of residence time for planned remediation efforts is not quantitative and, therefore, lacks sufficient resolution to substantiate impact conclusions.

Recommendation: *Re-analyze Impact WQ-26 based on quantitative measures of residence time and selenium bioaccumulation that: (1) include specificity of locations and species, and (2) reflects current science that assesses the Delta as one interconnected system physically and biologically.*

Consider making the environmental commitments for selenium in restored areas a high priority by addressing these impacts within the main water quality and aquatic resources part of the EIS. Clearly identify the potential impacts of using water supplies containing selenium for wetlands with high residence times and selenium risks to fish and wildlife.

Selenium bioaccumulation modeling for sturgeon is shown in Appendix 8M2, but an impact conclusion is not listed within the category of impacts to white and green sturgeon (e.g., AQUA-136). Other identified species considered of concern in terms of selenium effects, for which no conclusions are provided, are diving ducks (scoter and scaup), clapper rail, salmonids (Chinook salmon, steelhead) and splittail.

Recommendations: *Provide an impact analysis for these species, and add impact conclusions for these species to the category of Fish and Aquatic Resources impacts.*

Illustrate and conceptualize mixing of selenium sources. Document representativeness of sites to selenium modeling to enable coordination of site locations to modeling predictions.

Perform selenium bioaccumulation modeling to specifically address the potential for (1) less Sacramento River flow (i.e., less estuary dilution and increased residence times), and (2) more San Joaquin River flow (increased Se loads or concentrations) entering the Plan Area. Perform an analysis that is both species-specific and location-specific, and develop habitat-use and life-cycle diagrams to inform the selenium modeling. Identify the times and places of greatest ecosystem sensitivity to selenium as outcomes of the modeling and relate the outcome to the entire plan area. Add selenium bioaccumulation modeling of additional fish and bird species to identify the predators with the greatest selenium exposure within fish and bird communities. Development of a comprehensive set of enrichment factors to relate dissolved selenium concentrations to suspended particulate material selenium concentrations would address the uncertainty in this step of selenium modeling.

The data sets that were used to model selenium in sturgeon and derive impacts are not spatially and temporally matched. Locations in the western Delta are ecologically and hydrologically disconnected from the Bay, where effects to sturgeon are known to be greatest.²⁹

Recommendation: *Consider comprehensive sturgeon habitat and cumulative effects in selenium modeling and impact analysis.*

The multiple times that eutrophication is mentioned on page 8-70 (Section 8.2.3.1.0 Nitrate/Nitrite and Phosphorous) may suggest to some readers that the San Francisco Estuary is suffering from large-scale eutrophication. Currently, eutrophication is not one of the major stressors negatively affecting the open waters of the San Francisco Estuary.

Recommendations: *Clarify that monitoring shows that the open waters of the San Francisco Estuary do not show signs of large-scale eutrophication and that anoxic waters and sediment are not commonly reported in the Estuary. Identify the sites with demonstrated low dissolved oxygen problems and describe the extent to which nutrients, subsequent algal blooms, and microbial respiration contribute to low DO problems in the Estuary.*

Discuss the lack of diatom algal blooms as a stressor in the Estuary and the relationship between nutrients and the composition of the algal community and subsequent frequency of desired algal blooms. This can be a short summary in a few sentences and can refer to other locations in the document where nutrients and algal community composition is discussed in more detail. See <http://www.sfestuary.org/pea-soup/> for more information.

E. Fish and Aquatic Resources

The temperature analysis does not provide biologically meaningful temperature estimates for Chinook salmon and, potentially, other fishes. The majority of temperature estimates are calculated using models that predict monthly average temperatures which can obscure the occurrences of daily temperatures fluctuating above life stage impairment and lethal thresholds for Chinook salmon and other fishes. Daily temperatures are estimated for the mainstem of the upper Sacramento River in the segment downstream of Keswick dam because a model with a daily time unit of analysis is available for this exercise (Sacramento River Water Quality Model). Temperature models with a daily time unit are not yet available for the Feather, American, lower Sacramento, and Trinity Rivers, but we understand Bureau of Reclamation is developing daily temperature models as part of the OCAP Biological Opinion remand process. Completion of these models should be prioritized and used in any additional analyses to provide meaningful estimates of temperature impacts to fishes.

Recommendations: *Estimate potential temperature impacts when updated models become available. Identify temperature thresholds for specific life stages based on NMFS recommendations and other available guidance; for example, EPA temperature criteria. Identify mitigation measures that would minimize adverse temperature conditions.*

²⁹ (1) Linares, J., Linville, R. Eenennaam, JV, Doroshov, S. 2004 Selenium effects on health and reproduction of white sturgeon in the Sacramento-San Joaquin estuary. Final Report for Project No. ERP-02-P35.

(2) Linville RG 2006 Effect of excess selenium on the health and reproduction of white sturgeon (*Acipenser transmontanus*): Implications for San Francisco Bay-Delta. Ph.D. dissertation, University of California, Davis, CA 232 pp.

(3) Beckon, WN & Maurer, TC, 2008 Species at Risk from Selenium Exposure in the San Francisco Estuary. Final Report to the US EPA IAA No. DW14022048-01-0.

(4) Presser TS and Luoma SN 2010 Ecosystem-Scale Selenium Modeling in Support of Fish and Wildlife Criteria Development for the San Francisco Bay-Delta Estuary, California USGS Administrative Report.

EPA Region 10 developed EPA Guidance Criteria for Water Temperature³⁰ to assist States and Tribes in adopting water quality standards for the protection of coldwater salmonids. The guidance criteria provide an averaging period for temperature targets and would be an appropriate benchmark against which to evaluate estimated impacts from CM1 alternatives, in addition to the evaluated criteria summarized in Table 11-1A-11.

Recommendation: Compare impacts from CM1 and other CMs with the potential to impact water temperatures to EPA Guidance Criteria for Water Temperature to provide an additional metric for estimated impacts to Chinook salmon.

The Draft EIS assumes that state-of-the art fish screens would function in a way that results in minimal to zero entrainment, but provides no evidence that these screens would completely or almost completely prevent entrainment of larval, juvenile, or adult covered fishes. No details are provided regarding the design or operation of the proposed fish screens.

Recommendation: Explain how the proposed fish screens would prevent entrainment of all life stages of covered fishes. Describe the entrainment thresholds that would trigger reduced pumping at the North Delta Diversion intakes, and mitigation strategies for minimizing entrainment if the fish screens do not function as anticipated.

The construction analysis relies on Best Management Practices for concluding that potential impacts to aquatic species would not be adverse. The construction is estimated to span ten years, coffer dams are expected to be constructed simultaneously, and potentially increasingly severe weather conditions during the ten-year construction period are likely to challenge the most effective Best Management Practices. Additionally, some of the equipment that would need to be constructed (including the dual 40 foot wide tunnel boring machines) would be some of the largest in the world and the Best Management Practices that have been designed for more conventional construction projects may not be applicable or effective as anticipated.

Recommendation: Describe options for minimizing construction impacts in the event that BMPs do not perform as anticipated or completely fail, given the size and scale of the construction.

NEPA effects determinations used in Chapter 11 include: beneficial, not adverse, adverse, and no determination. These terms are not defined nor are thresholds for selecting among them identified. The reader is not provided with an indication or description of the magnitude of estimated positive or negative impacts or uncertainty associated with each conclusion.

Recommendation: Define the NEPA conclusions and provide thresholds -- quantitative when possible -- for each category so that it is clear why some estimated impacts result in a NEPA conclusion.

Multiple indicators are used to evaluate impact and derive NEPA Effects determinations; however, the Draft EIS does not describe how each indicator was used to support the NEPA effects determination. For example, AQUA-42 Effects of Water Operations on Conditions for Chinook salmon (Winter-Run ESU) uses nine indicators to determine the overall effect of CM1 alternatives on adult and juvenile migration for winter run Chinook salmon. We have summarized key information from this section in the following table:

³⁰ http://www.epa.gov/region10/pdf/water/final_temperature_guidance_2003.pdf

AQUA-42 Effects of Water Operations on Conditions for Chinook salmon (Winter-Run ESU)

Migration Indicators	Alt 1	Alt 4	Alt 7	Alt 8
Upstream of Red Bluff flow during juvenile emigration period (Nov – August)	Similar to No Action Alternative (NAA) July & October + 36% Aug, Sept, & Nov -44%	Similar to NAA November 5-18% lower	Similar to NAA November -14%	Flows 26% lower than NAA
Monthly mean temperature between Keswick and Bend Bridge (Nov – Aug)	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA
Flow during adult migration (Dec – Aug)	Similar to NAA; August flows could be 19% lower.	Similar to NAA but May & June +12%	Similar to NAA or greater w/ few (unstated) exceptions.	Similar to NAA but up to 18% lower in July and August
Monthly mean T btw Keswick and Bend Bridge (Dec – Aug)	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA	Less than 5% difference in monthly mean T relative to NAA
Through-Delta Monthly mean flows downstream of NDD	10-31% lower than NAA	11-23% lower than NAA	25% lower than NAA	15% lower than NAA in November
Predation at intakes % of annual juvenile production (2 methods)	9%-3% 18.5%	0.02 – 0.30% 12%	0.02 – 0.30% 12%	0.02 – 0.30% 11.6%
	19,000 linear feet 22 acres of habitat	6360 linear feet 12.3 acres	6360 linear feet 12.3 acres	6360 linear feet 12.3 acres
DPM analysis of % survival through the Delta to Chipps	Wet – 45.5% Dry – 26% All – 33.3%	Wet – 45-46% Dry – 25-27% All – 33-35%	Wet – 45% Dry – 26% All – 33%	Wet – 44% Dry – 27% All – 33.5%
Adult migration -- % of Sacramento River-origin water at Collinsville	December – 63% January – 71% February – 67%	December – 66% January – 73% February – 68%	December – 65% January – 73% February – 67%	Results not provided for Alt 8 but a range of 58–71%
NEPA Effects Determination	Adverse	Not Determined	Not Determined	Adverse

It is not clear whether all nine indicators are considered equal when identifying the NEPA effect determination for migration overall. The monthly mean temperatures do not substantially vary among alternatives, so that indicator appears to be less useful than the others in differentiating between the alternatives. Some indicators show improved conditions relative to the No Action Alternative, while others show relatively worse conditions. For some indicators, the level of detail that is provided in the text differs from one alternative to another. The narrative descriptions of the multiple indicators in the NEPA Effects paragraphs often highlights different indicators when discussing the NEPA Effects determination, suggesting that some indicators are more important than others, depending on the alternative being evaluated. The reader sees only the summarized results of multiple indicators but cannot ascertain how the information was used to determine NEPA effects.

Recommendation: Explain how each metric was used, and how the metrics were used in combination, to derive the NEPA Effects determinations, including whether the metrics were weighted in any way. Thresholds that were used to determine the appropriate NEPA Effects conclusion should be disclosed.

The description of Clean Water Act programs in the Water Quality Regulatory Setting Section 8.3.1.1 (p. 8-112-114) contains a number of errors. For example, it appears to indicate that EPA has delegated its CWA oversight responsibility to the State of California. A useful description of CWA programs and how they operate in the San Francisco Bay Estuary can be found in the US EPA Advance Notice of Proposed Rule-making for Water Quality Challenges in the San Francisco Bay/Sacramento San Joaquin Delta, available at http://www2.epa.gov/sites/production/files/documents/baydeltaanpr_fr_unabridged.pdf pages 11-18.

Recommendation: Review the description of CWA programs in the San Francisco Bay Delta Estuary and California.

It appears from the Draft EIS that there could be significant impacts to vernal pools from implementation of CM1 and CM4. Impacts and mitigation for vernal pools are only presented as “vernal pool complex” and it is not clear from the document what percentage of this habitat is vernal pool wetlands (wetted surface area).

The Draft EIS states that implementation of CM4 may result in the loss of 372 acres of vernal pool complex habitat and CM1 could result in up to an additional 37 acres of loss (depending on alternative). With the information in the Draft EIS we cannot assess what proportion of these impacts are to wetlands. The document also states that AMM12 limits removal of “vernal pool crustacean habitat” to 10 wetted acres. However, it is not clear if all vernal pool wetlands are being considered “crustacean habitat.” According to the document, these 10 wetted acres of crustacean habitat equates to approximately 67 acres of “vernal pool complex” habitat. The 67 acres of impact allowed by AMM12 is significantly less than the 372 acres of potential loss identified for CM4.

Because the Draft EIS only presents theoretical footprints for tidal marsh restoration under CM4, it is unclear whether CM4 can be fully implemented while limiting vernal pool loss to 10 wetted acres as called for under AMM12. As the Draft EIS acknowledges, vernal pools are a highly sensitive community that has experienced significant loss in California. Yet, only 40 acres of restoration and 400 acres of protection are proposed in the near-term under the plan. Given the potential direct loss identified for CM1 and CM4, and the potential functional loss identified from implementation of CM2, the proposed vernal pool restoration may not be sufficient to meet mitigation needs under CWA Section 404. Mitigation needs cannot be fully assessed until project level information is available for all CMs.

Recommendations: Clearly state what percentage of the vernal pools complex habitat may be vernal pool wetlands (by wetted surface area). Clarify whether AMM12 applies to all vernal pool wetlands or only vernal pool wetlands occupied by special status crustaceans.

Clearly state how many acres of vernal pool wetlands may be lost from implementation of CM1 and CM4. Clarify whether it is feasible to fully implement CM4 while limiting vernal pool losses to 10 wetted acres and if there is a tradeoff, please disclose and discuss.

Quantify the potential functional loss to vernal pool habitat from changes in inundation and acknowledge that compensatory mitigation may be required for loss of function even if there is no net loss in area. Acknowledge and address that compensatory mitigation requirements under CWA Section 404 may be greater than the vernal pool complex restoration and protection proposed under the plan.

Appendix 3B details dredged material (DM) and reusable tunnel material (RTM) disposal and reuse commitments, among other environmental commitments. Neither Appendix 3B nor Chapter 3 details how much DM and RTM will be generated by each alternative; however, Chapter 12 identifies potentially significant impacts to wetlands and waters from disposal of this material. Impacts to jurisdictional wetlands and waters must be avoided and minimized to the maximum extent practicable consistent with the 404 Guidelines. Furthermore, the Draft EIS does not address the Delta Long Term Management Strategy (LTMS)³¹ goal to maximize beneficial reuse of DM by setting specific reuse targets for both DM and RTM. Appendix 3B states that material will be placed in multiple storage locations and reused in BDCP projects to the extent feasible, however, there are potentially many other construction and restoration projects in the Delta that could use the DM and RTM. If material will be placed in waters either temporarily or permanently, sediment testing will need to be coordinated with the Corps, EPA, and Regional Water Quality Control Boards.

Recommendations: Include the volume of DM and RTM in Chapter 3 and Appendix 3B. In Appendix 3B clearly state that placement of DM and RTM must comply with the CWA 404(b)(1) Guidelines, in addition to meeting to BDCP goals.

Discuss beneficial reuse goals for DM and RTM, including whether material will be made available for reuse in projects within and outside the BDCP.

Discuss whether placement of DM and RTM on peat soils, either temporarily or permanently, will further subsidence and undermine levee stability.

Clearly identify accessibility of placement sites and commit to promoting beneficial reuse of DM and RTM both within and outside BDCP projects.

For any material placed in waters, clarify that sediment testing must be coordinated with the USACE, EPA, and RWQCB.

F. Energy

The Draft EIS states that conveyance facility energy requirements are moderate and would not result in any substantial impacts (p. 21-25). The cumulative impacts analysis concludes that, while the cumulative energy demands of the BDCP, in combination with ongoing and reasonably foreseeable

³¹ The San Francisco Bay Long Term Management Strategy (LTMS) is a cooperative effort of EPA, the US Army Corps of Engineers, the San Francisco Regional Water Quality Control Board, the San Francisco Bay Conservation and Development Commission, and stakeholders in the region to develop a new approach to dredging and dredged material disposal in the San Francisco Bay area. The LTMS serves as the “Regional Dredging Team” for the San Francisco area, implementing the [National Dredging Policy](#) in cooperation with the [National Dredging Team](http://www.epa.gov/region9/water/dredging/ltms/index.html).<http://www.epa.gov/region9/water/dredging/ltms/index.html>

future projects, may affect regional resources, the increase attributable to any alternative is not cumulatively considerable, compared to statewide use (300,000 gigawatt-hours) (p. 21-61). A comparison only to statewide use does not provide sufficient context for decision makers and the public to understand the new energy demands associated with the BDCP alternatives and evaluate their potential effects on local and regional energy supplies.

Recommendations: *Include a table showing the current overall energy usage by the CVP and SWP to supply water to the end users, compared to the projected overall energy demand by the CVP and SWP to do the same under the No Action and each of the BDCP build alternatives. Separately, for additional context, compare these projections to recent and reasonably foreseeable development projects, including the High Speed Rail project. Include an evaluation of the effects of each alternative on peak and base period demands, as well as effects on local and regional energy supplies, as recommended by the State CEQA Energy Conservation Guidelines (Appendix F).*

EPA supports the use of gravity-fed tunnels to transport water to minimize net energy use for conveyance to the greatest extent possible. Alternative 4 is designed to take greater advantage of gravity than the other alternatives. According to the Draft EIS, the Department of Energy has estimated that construction of two 40-foot tunnels (Alternative 4) would require about 78% more electrical energy than would be needed for alternatives requiring two 33-foot tunnels (p. 21-31 and Table 21-9); however, since Alternative 4 would eliminate the need for an intermediate low-head pumping plant for flows of more than 9,000 cfs (p. 21-31), Alternative 4 would be able to ‘recover’ the extra energy used during construction in 25 years. It is not clear why the 33-foot tunnel alternatives do not include gravity-fed designs.

Recommendations: *Discuss the practicability of increasing the energy head (difference in water elevation) between the intermediate Forebay at the north of the Delta and the Clifton Court and Byron Forebays to allow for greater gravity-fed flow through the 33-foot tunnel alternatives. Discuss whether 9,000 cfs could be achieved without the need for intermediate low-head pumping through 33-foot tunnels.*

Consider alternate locations for the intakes, including upstream of the Sacramento Regional Wastewater Treatment Plant, and evaluate whether an increase in the energy head between the alternative north end intake locations and the south end of the proposed conveyance system could decrease net energy use for each alternative.

Include a table that demonstrates, for each alternative, the time that would be needed to ‘recover’ the energy used during construction. Incorporate into the table any additional alternatives that would minimize net energy use, and the time to ‘recover’ energy used during their construction. As part of the same table, include the overall energy for construction and operation of the BDCP for the total expected life of the project.

EPA strongly supports the goal, stated in the Draft EIS, to power the BDCP’s average 270 megawatt (MW) construction load and 57 MW permanent load with 100% renewable energy (p. 21-33). This would avoid emissions of greenhouse gases and other pollutants associated with the generation of energy from fossil fuels. We find, however, that the Draft EIS defers much of the necessary analysis of renewable energy benefits, challenges, and opportunities to the future development of other documents, and lacks clear commitments regarding procurement of renewable energy. For example, regarding construction, Mitigation Measure AQ-15 in Chapter 22 includes a suite of greenhouse gas emission reduction strategies that would be utilized to develop a future GHG Mitigation Program to reduce construction related GHG emissions to net zero (p. 22-75). At this time, it is unclear which strategies

would comprise the program and whether a commitment would be made to enter into a purchase agreement for 100% renewables (Strategy 1) or temporarily increase renewable energy purchases to offset BDCP construction emissions (Strategy 12).

Regarding operations, Chapter 21 of the Draft EIS explains that the energy needed for pumping water would be provided from a mix of hydro, power purchase contracts, power exchanges and power markets (p. 21-22). The Draft EIS notes that 60% of the State Water Project's (SWP) 2010 load was met by hydro resources, while the remainder of the load was met by a mix of coal power and real-time purchases from the California Independent System Operator's (CAISO) energy market (p. 21-7). According to Chapter 21, the potential for new or expanded electrical power generation facilities is not discussed in the Draft EIS because it will be addressed through SWP power purchase programs (p. 21-33). Similarly, new energy sources to support the potential increased load from the Central Valley Project (CVP) are not discussed in the Draft EIS. It is unknown what type of power source (e.g., renewable, natural gas) would be substituted for the CVP-generated electricity that would be consumed by the project, itself, or to what extent some of additional energy required would be made up with higher efficiency (p. 22-198).

The Draft EIS references DWR's Climate Action Plan, which established near-term (by 2020) and long-term (by 2050) goals of reducing emissions of greenhouse gases throughout DWR's operations -- including those of the SWP -- in part, by increasing the use of renewable energy sources. Similarly, the President's June 2013 Climate Action Plan established a goal for the federal government of consuming 20 percent of its electricity from renewable energy sources by 2020.

Recommendations:

Identify opportunities to power the BDCP conveyance system with renewable energy for the life of the project to demonstrate how the stated goal of powering the anticipated construction and operations energy loads with 100% renewable energy could be met. Consider committing to power construction and/or the conveyance system operations with 100% renewable energy, similar to the CA High Speed Rail (HSR) Authority's commitment to use 100% renewable energy for operation of the HSR. At minimum, commit to ensure that construction and operation of the BDCP facilities are powered by renewable energy sources to the greatest extent feasible.

Discuss whether DWR's Renewable Energy Procurement Plan (REPP) would provide a mechanism to secure 100% renewable sources for construction and operations of the BDCP prior to project approval. Consider adopting an approach similar to the California High Speed Rail Authority's partnership with the National Renewable Energy Laboratory to create and implement a strategic energy plan for the BDCP. Outline the steps that would need to occur, the barriers that would need to be overcome and the potential for partnerships with entities in the vicinity of the Delta that are aiming to achieve similar goals.

Quantify how securing new, 100% renewable energy sources for construction and operations of the BDCP would assist DWR in achieving its Climate Action Plan (CAP) goals. Discuss the extent to which hydropower resources will be used to meet the 2020 and 2050 goals in the CAP, and whether larger hydropower generators would qualify.

Discuss the extent to which the CVP is currently being used to meet California's renewable energy goals. To reduce potential indirect effects from substitute electricity for any new CVP energy usage, consider a commitment to ensure that new, renewable sources are secured to compensate for any use of CVP electricity for the BDCP.

Under the “NEPA Effects” section for each alternative in Chapter 21.3.3, the Draft EIS indicates that the use of Best Management Practices will ensure that only high-efficiency equipment is utilized during construction and that all feasible control measures to improve equipment efficiency and energy use are included. Similarly, it is noted that operation of the water conveyance facilities would be managed to maximize efficient energy use, including off-peak pumping and the use of gravity and, therefore, would not result in a wasteful or inefficient energy use. These conclusions are identical for every tunnel conveyance alternative.

Recommendations: Explain how all of the energy efficiency mitigation measures and Best Management Practices referenced in Chapter 21 would be made an enforceable part of the project's implementation schedule. We recommend implementation of applicable mitigation measures prior to or, at a minimum, concurrently with, commencement of construction of the project.

With regard to solicitations for future contracts for project construction and operations, consider including the following as energy efficiency requirements:

- *The use of energy- and fuel-efficient fleets;*
- *For construction, the utilization of grid-based electricity and/or onsite renewable electricity generation, to the extent possible, rather than diesel and/or gasoline powered generators;*
- *Using lighting systems that are energy efficient, such as LED technology;*
- *Recycling construction debris to maximum extent feasible;*
- *Planting shade trees in or near construction projects where feasible;*
- *Giving preference to construction bids that use Best Available Control Technology, particularly those seeking to deploy zero emission technologies;*
- *Employing the use of alternative fueled vehicles;*
- *Using the minimum feasible amount of GHG-emitting construction materials that is feasible;*
- *Use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production; and,*
- *Use of lighter-colored pavement where feasible.*

G. HCP Monitoring and Assessment

The BDCP is a project of such significance, with a reliance on extensive monitoring and technical information, that its development and approval represents an opportunity to advance aquatic resource monitoring for the entire state of California. For several years, EPA and partner state and federal agencies have been advancing a comprehensive monitoring program that supports integration of federal and state aquatic resource permitting for Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs). When implemented as a monitoring program, the framework that has been established will generate information to evaluate site specific and regional outcomes of habitat conservation and aquatic resource mitigation activity. This framework has been created in consideration of the Clean Water Act (CWA) Mitigation Rule (33 CFR Parts 325 and 332; 40 CFR Part 230), the “Five Point Policy” (Addendum to the HCP Handbook), Tenets of a State Wetland and Riparian Monitoring Plan (CA Water Quality Monitoring Council 2010)³², and Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans³³.

³² Tenets of a State Wetland and Riparian Monitoring Program. 2010. California Water Quality Monitoring Council (CA Wetland Monitoring Workgroup). (http://www.waterboards.ca.gov/mywaterquality/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf).

³³ Atkinson, A. J., P. C. Trenham, R. N. Fisher, S. A. Hathaway, B. S. Johnson, S. G. Torres and Y. C. Moore. 2004. Designing Monitoring Programs in an Adaptive Management Context for Regional Multiple Species Conservation Plans. U.S. Geological Survey Technical Report. USGS Western Ecological Research Center, Sacramento, CA. 69 pages. (<http://www.dfg.ca.gov/habcon/nccp/publications.html>).

At the state level, the 2007 MOU signed by the Secretaries of the California Environmental Protection Agency (Cal/EPA) and the California Natural Resources Agency (Resources Agency) establishes the Water Quality Monitoring Council. The Council now requires the boards, departments and offices within Cal/EPA and the Resources Agency to integrate and coordinate their water quality and related ecosystem monitoring, assessment, and reporting. The Monitoring Council is further aligning state aquatic resource monitoring programs with their federal counterparts in order to develop an integrated monitoring program that addresses the needs of the HCP/NCCPs while providing CWA monitoring data and information that will satisfy the Corps of Engineers, EPA, and the Water Boards.

The primary goal of such a program is to develop a fully integrated monitoring framework (covering ESA, CESA, CWA, and the Porter-Cologne Act) that provides the best available information on the extent of impacts from permitted activities and progress toward achieving conservation targets using common databases to facilitate the sharing of this information across eco-regions and among local, regional, state and federal programs.

The monitoring design for this comprehensive federal/State monitoring program is based on the EPA tiered monitoring approach (http://water.epa.gov/type/wetlands/outreach/upload/techfram_pr.pdf), which has also been adopted by the State, is increasingly used by programs across the country, and is consistent with the tiered approach described by Atkinson et al. (2004)³⁴. The Delta Science Plan (dated 12/30/2013 and found at <http://deltacouncil.ca.gov/science-program/delta-science-plan>) describes a process by which this monitoring approach could be developed and implemented, including sections on adaptive management, data management, modeling, and communication. EPA strongly supports the recommendations in the Delta Science Plan.

Recommendation: Discuss how the BDCP mitigation monitoring and reporting program will be consistent with the federal and State efforts discussed above.

³⁴Ibid

8/27/2014 1:33pm

BDCP DEIS: Corrections and Additional Editorial Recommendations

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Will, Ryan –

Yesterday, I sent you EPA's major comments on the BDCP DEIS. During our review of the DEIS, we also identified a number of corrections that are needed, as well as some missing information that would improve the document's usefulness. These are listed below. In our role as a Cooperating Agency, we request that you also address the following in the Supplemental Draft EIS:

- Potential funding sources shown on page 8-105 of the BDCP are not valid. The table in the BDCP shows EPA's 2011 budget being spent on conservation measures under the BDCP. The text states that "Funding for this program [California Bay-Delta Restoration appropriations] is assumed to continue and to support natural community restoration under BDCP" (p.8-106 of the BDCP). EPA has not committed any funding towards the construction and implementation of the BDCP and any future funds that are available for projects in the San Francisco Bay Delta are subject to EPA's future budget, legislative mandates, and agency discretion. Please remove the section of the BDCP that indicates that EPA funding is assumed to continue and support restoration components of the BDCP for 50 years.
- There are errors in the Draft EIS describing multiple Clean Water Act programs including the CWA 404 Regulatory Program. In addition, the CWA Section 404 Program is described differently in different chapters. Please make the following corrections:
 - Correct language on page 8-114 that states that CWA Section 404 is implemented "via the issuance of National Pollutant Discharge Elimination System permits." The NPDES program comes from Section 402 of the CWA. The words "NPDES" permits should be replaced with "Section 404 permits." The following sentence in the Draft EIS accurately states that the "USACE is authorized to issue Section 404 permits."
 - Correct language on page 8-113 (lines 4-6) that states California "administers the CWA through the Porter-Cologne Act." Section 303 of the CWA gives the states the authority to establish water quality standards, subject to EPA approval, and the NPDES Program is delegated to the State of California under CWA Section. California administers these CWA programs **and** the Porter-Cologne Act.
 - The following sentence in the Draft EIS on page 8-114 is not correct and should be removed: "If a federal agency is a partner in the implementation of a project, the proposed action/project must be recognized as the LEDPA." A proposed action is not the LEDPA simply because a federal agency is a partner and chooses that proposed action as its preferred alternative. Federal agencies are required to comply with the 404(b)(1) Guidelines and their preferred alternative must meet the restrictions to discharge outlined at 40 CFR 230.10.
- Table 3-3 (p.3-19) "Summary of Proposed BDCP Conservation Measures of All Action Alternatives" is the only complete Conservation Measure (CM) summary table provided in the entire Draft EIS. While it is helpful to the extent that it lists all of the CMs in one place, it lacks key information such as acreage

targets.

- CM2 is not included in the list of Conservation components for Alternative 1A on p. 3-49. The Draft EIS states that CM2 is included in all of the Alternatives considered.
- CM2 is not included in the description of CM3 Natural Communities Protection and Restoration (page 3-129).
- Table 8-1 Designated Beneficial Uses for Water Bodies in the Study Area identified Estuarine Habitat as an “Additional Beneficial Use of the Delta” suggesting the Delta is the only group of water bodies with the Estuarine Habitat beneficial use. The San Francisco Bay and its component water bodies, including Suisun Bay and Marsh also have the Estuarine Habitat beneficial use and they are part of the BDCP “Plan Area.”
- The 2012 Pulse of the Delta was finalized in October 2012. Delete the word “draft” in reference to the *2012 Pulse of the Delta* on Page 8-48, line 39.
- Figure 8-7 shows the compliance locations commonly discussed in Chapter 8 with so many labeled locations that the reader cannot see their location precisely.
- It is very helpful to readers to provide citations when “available evidence” is referred to in the Draft EIS. For example, page 8-457, line 7, states “available evidence suggests that restorations activities establishing new tidal and non-tidal wetlands, new riparian and new seasonal floodplain habitat could potentially lead to new substantial sources of localize DOC loading within the Delta.”
- Existing Conditions and No Action Alternative values are slightly different in Tables 11-1A-5 (p. 293) and 11-4-4 (page 1302). The tables rely on the same entrainment analysis at south Delta pumps, but one is for Alternative 1A and the other is for Alternative 4. The Existing Conditions and No Action Alternative numbers are very similar, but should be identical, and it is not clear why they are different. This occurs again for the North Bay Aqueduct Analysis (p. 11-295 Table 11-1A-7 v. page 11-4-6 page 11-1304).
- The list of local habitat conservation plans and natural community conservation plans in the Delta includes plans that are adjacent to the Delta is missing the south Sacramento HCP (page 11-176).
- Page 11-160: There is very little description of Section 10 and Section 7 of ESA. The Revised or Supplemental Draft EIS should include a description of basic regulatory requirements and targets that are applicable to the BDCP such as “contribute to recovery” for Section 10 and “avoid jeopardy” for Section 7.
- Page 11-166: CWA Section 303(c) Water Quality Standards and protection of beneficial uses should be discussed in this section.
- Page 11-175: The need for a change in point of diversion to D1641 should be discussed in this section.
- Page 11-183: Table 11-3, please discuss options for soft stabilization along river banks near the intake structures.

- Table ES-11 and its associated text describe changes in average Delta outflow, total exports, and south Delta pumping for the BDCP alternatives in the late long term (2060); however, the baseline for this comparison should be specified.
- The change in total exports from the No Action Alternative to Alternative 1 is listed in Table ES-11 as 1,025 thousand acre feet however, subtracting the value of No Action Alternative total exports (4441 TAF) from that of Alternative 1 total exports (5459 TAF) yields a difference of 1018 TAF. Similar small potential errors are present in the rest of the Total Exports Change column.
- The average Delta outflow and export values in Table ES-11 do not match average Delta outflow and export values in Table 5-4 Water Supply Summary Tables. Many of the values are very close to one another, but are not the same. The true values are important for determining compliance with Delta outflow water quality standards.
- Selenium effects and thresholds vary between the EIS and the appendices (see p. 8-167 (table 8-55) and page 8M-9 (table 8M-3)).
- Language used to describe Total Maximum Daily Loads in the Plan Area and Study area for Chapter 8 could be misinterpreted. Table 8-4 and the text in lines 13-15 on page 8-24 state that a number of TMDLs are “complete”, which could be read as suggesting that TMDL water quality targets have been achieved, which is not accurate for most TMDLs. Many of these TMDLs are *adopted* and water quality is improving as a result, but is not yet meeting the TMDL quantitative targets. Replace the word “complete” with “adopted” in reference to TMDLs in this section.
- Table 22-5 should be updated to identify the annual PM2.5 NAAQS as 12 micrograms per meter cubed ($\mu\text{g}/\text{m}^3$).
- Table 22-3 provides ambient air quality monitoring data, in terms of standards exceedances, for the relevant air basins from 2008 to 2010. This table should be updated to provide monitoring data from 2010 to 2012.
- The data used to describe organophosphate pesticides on page 8-85, Tables 8-23 and 8-24 do not characterize existing conditions. More recent data show that diazinon is rarely detected in Delta waters in recent years and chlorpyrifos detections and exceedances have substantially declined. Update the pesticide discussion using more recent data. These data are available at <http://www.ceden.org>.
- In Table 30-2, it is unclear how much of the environmental water is also used by agriculture and urban users. Separate tables by water year type would be more informative.

Thank you for your consideration of these recommendations. If you have any questions, please contact me.

-Kathy

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