

DEIRS Ltr#	Cmt#	Comment	Response
1720	1	<p>The Professional Engineers in California Government (PECG) welcomes and appreciates the opportunity to comment on the Draft Bay Delta Conservation Plan (BDCP) and the associated Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS).</p> <p>PECG represents the engineers and related professionals working at the Department of Water Resources (DWR), the State Water Resources Control Board (SWRCB), the Department of Fish and Wildlife (DFW), and other state agencies and departments responsible for the successful delivery of the Bay Delta Conservation Plan.</p> <p>It is in the interests of public safety to ensure that the BDCP most efficiently and effectively meets the coequal goals of water supply reliability and Delta ecosystem restoration</p>	<p>Alternative 4A, also known as California WaterFix, has been developed in response to public and agency input and is the new CEQA Preferred Alternative. Alternative 4A is also the NEPA Preferred Alternative, a designation that was not attached to any of the alternatives presented in the 2013 Public Draft EIR/EIS. Alternative 4 remains a potentially viable alternative and is being carried forward in this RDEIR/SDEIS because it represents the original habitat conservation plan/natural community conservation plan (HCP/NCCP) alternative approach, and because it provides an important reference point from which the Alternative 4A, 2D, and 5A descriptions and analyses were developed. If the Lead Agencies ultimately choose the alternative implementation strategy and select an alternative presented in the RDEIR/SDEIS after completing the CEQA and NEPA processes, elements of the conservation plan contained in the alternatives in the 2013 Public Draft EIR/EIS may be utilized by other programs for implementation of the long term conservation efforts. For detailed responses on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>Please see Master Response 3 for additional information regarding the Purpose and Need and Master Response 28 for a discussion of the proposed project's Operational Criteria.</p>
1720	2	<p>BDCP/SWP Facilities Must be Owned and Operated by the State:</p> <p>Professional Engineers in California Government (PECG) appreciates the provisions in the BDCP requiring that "the State of California, through DWR, will construct, own, and operate any new diversion and conveyance facilities described in this plan." [Footnote 1] and "the operation of the SWP will remain under the control and responsibility solely of DWR." [Footnote 2] This is critically important. Given that BDCP facilities will be financed by multiple public revenue sources, including monies supplied by taxpayers and ratepayers, it is essential that the conveyance (Conservation Measure 1/CM 1) and any other BDCP-related facility be built and owned by the State and be managed by the State in the best interest of all Californians. PECG would strongly oppose any effort to outsource BDCP facilities and management -- just as it has long opposed efforts to outsource SWP operations, convert them to a public-private partnership, or turn them over to be operated by other public or private entities.</p> <p>[Footnote 1: Bay Delta Conservation Plan Draft, November 2013, Chapter 7, Page 10.]</p> <p>[Footnote 2: Bay Delta Conservation Plan Draft, November 2013, Chapter 7, Page 11.]</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), a response is provided generally referring the commenter to relevant information.</p>
1720	3	<p>Ensuring that SWP/BDCP facilities remain under State control and that operations are performed by DWR and its staff will ensure the safe, cost-effective and transparent delivery of CM 1 and any other BDCP-related facility. Just as importantly, it will ensure that the facilities and California's water resources are managed in the public interest.</p> <p>This principle was best summarized by David M. Walker, former Comptroller of the United States (1998-2008) when he said: "There is something civil servants have that the private sector does not, and that is the duty of loyalty to the greater good -- the duty of loyalty to the collective best interest of all rather than the interests of a few."</p> <p>In fact, "duty of loyalty to the greater good" should be the guiding principle for all BDCP activities. And this will be particularly important when it comes to the design, construction and inspection of the conveyance facility.</p>	<p>Please see Master Response 5 for detailed responses on the primary issues being raised with regard to the BDCP or Alternative 4.</p> <p>The purpose of an EIR/EIS is to provide the public and the decision-makers with detailed information about a project's environmental effects, ways to minimize the projects effects, and reasonable alternatives to the project. The information requested, while relevant to the ultimate management of the design and construction of the facilities associated with the proposed project, is not relevant to the potential environmental impacts of the proposed project and is therefore outside the scope of an EIR/EIS. The adaptive management/collaborative science component of the proposed project contains a description of the proposed management of one of the processes PWAs may be involved related to the design and construction phase of the project.</p>
1720	4	<p>Reconsider Design Construction Enterprise Structure:</p>	<p>The DCE management structure is not part of the proposed project. Please see Master Response 5 for</p>

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		<p>Professional Engineers in California Government (PECG) understands and appreciates that the timely and cost-effective delivery of the CM 1 will require the collaboration and expertise of state and federal agencies, water contractors, countless other stakeholders and in certain circumstances the expertise of the private sector. However, PECG would caution that the Design and Construction Enterprise as currently envisioned to deliver the conveyance facility has the potential to be manipulated to put the interests of water contractors and private interests ahead of the greater good. PECG is particularly concerned by reports that suggest the DCE will create a nine-member board of directors to oversee construction that includes the DWR director and the regional director of the federal Bureau of Reclamation, but provides that the seven other members would represent water contractors and agencies.</p> <p>Given their financial participation, it is certainly appropriate to provide water contractors with a voice in the design and construction activities related to the conveyance. It does not seem appropriate, however, to provide them with seven seats on a nine-member board in which final decisions about design, facility location, land acquisition, budget, staffing, outsourcing and scheduling will be made by majority vote.</p> <p>While the DWR Director would chair the nine-member panel, that would not prevent the water contractors from seeking to implement decisions that are in their own best interest at the expense of responsible design, construction and inspection, landowners in the region, or the environment. It would also not prevent them from seeking to outsource engineering, environmental, planning and other work more appropriately performed by the public sector.</p> <p>We urge that the DCE structure be reconsidered and that DWR retain ultimate control over decisions related to implementation of CM 1.</p>	<p>information on the BDCP Governance structure.</p>
1720	5	<p>Minimize Outsourcing to Protect Safety, Conserve Resources:</p> <p>Professional Engineers in California Governments (PECG) would also urge that the BDCP minimize the outsourcing of engineering and related activities. Such contracting should only be considered when it is absolutely necessary to provide expertise that is not available at DWR, State Water Resources Control Board, CA Dept. of Fish and Wildlife or in other public agencies.</p> <p>This is particularly imperative when it comes to the construction inspection of the CM1 and other BDCP public works. Historically and appropriately, the construction inspector is the eyes, ears and voice of the public on any construction site. Inspectors ensure that construction and seismic standards are met, that projects meet safety requirements and that the materials used will stand the test of time. In short, they are there to ensure that the public gets what they pay for and that the public interest is protected. To protect the public and ensure worker safety, construction inspection on BDCP-related infrastructure should be considered an inherently governmental function that should not be outsourced.</p> <p>Limiting outsourcing will also help to reduce the total cost of the conveyance and other BDCP projects. California state agencies and departments currently utilize no-bid contracts to outsource thousands of engineering jobs at two or three times the cost of having qualified public servants perform the same functions. In implementing the BDCP, the state would be wise to rely on existing or obtainable staff to perform critical design, project management and inspection functions. Doing so will result in hundreds of millions of dollars of savings over the next two decades that would be better invested in the actual</p>	<p>The commenter’s comment is acknowledged. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		construction of the CM1 and other facilities.	
1720	6	Professional Engineers in California Governments (PECG) believes experience tells us that the public interest is best served when public agencies and servants responsible and loyal to taxpayers and ratepayers are responsible for the delivery and operations of public works projects like CM 1 and the other Delta improvement projects outlined in the BDCP	The commenter's opinion is acknowledged. Please see Response to Comment 1720-1.
1721	1	<p>The California Water Association (CWA) represents the interests of approximately 115 investor-owned water utilities that are regulated by the California Public Utilities Commission (CPUC). The CPUC, in turn, jointly cooperates with the California Department of Water Resources and the State Water Resources Control Board (State Board) in the disposition of its regulatory and customer service obligations associated with water supply, water-use efficiency, water rights and water quality.</p> <p>These CPUC-regulated water companies serve nearly 6 million Californians with safe, reliable, high-quality drinking water. All of CWA's largest members (those with more than 10,000 service connections) receive water directly or indirectly from the State Water Project (SWP). Therefore, CWA has a threshold interest in promoting and maintaining the overall health of the Sacramento-San Joaquin Delta (Delta) ecosystem, in order to provide high quality water utility services to customers throughout California.</p>	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1721	2	Equally significant, the California Water Association's member utilities represent millions of people whose water bills will be affected by the implementations of the Bay Delta Conservation Plan (BDCP or Plan). CWA appreciates the opportunity to comment on the public review draft of the Plan and the associated Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS).	The Lead Agencies recognize that the water resources needs of millions of water users represented by investor-owned utilities and appreciate the California Water Association's continued involvement with the planning process for the proposed project.
1721	3	<p>Co-Equal Goals:</p> <p>For decades, the State has struggled with how to address the range of challenges facing the Delta. In 2009, more than three years after BDCP planning began, the State enacted comprehensive legislation designed to advance several broad goals of the State with regard to the Delta. The Legislature declared it was a priority of the State to:</p> <p>"Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." (California Pub. Resources Code, [Section] 29702).</p> <p>Although BDCP planning efforts began prior to enactment of the 2009 legislation, the legislation, in which the California Water Association (CWA) was actively engaged and supported, has served to reinforce similar BDCP planning goals and to help guide development of the Plan. Clearly, the current operations in the Delta cannot be sustained; the decline of the Delta should not be allowed to continue. Equally clear is the fact that doing nothing is not an option, nor is reducing water supply reliability and quality for 25 million Californians a practical solution.</p> <p>Thus, CWA views the ultimate purpose of the BDCP as a means to establish a comprehensive solution that achieves California's co-equal goals of improving water supply reliability and enhancing the Delta ecosystem. Given the very real prospect of continued supply constraints, chronic droughts and increasingly challenging needs to maintain drinking</p>	<p>The comment states the California Water Association's support of the BDCP (Alternative 4) and the co-equal goals of protecting water supply and the Delta ecosystem. In response to comments received during the 2013-2014 Draft EIR/EIS public comment period, State and Federal agencies focused the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>For more information regarding the Delta Reform Act and the proposed project please see Master Response 31.</p>

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		<p>water quality, CWA is supportive of these efforts, and hopes the BDCP ultimately succeeds in solving California’s perpetual water supply and Delta ecosystem concerns.</p>	
1721	4	<p>The California Water Association (CWA) has reviewed significant portions of the Plan and the DEIS/EIR and is impressed with how the 22 conservation measures are designed to work together to achieve the co-equal goals. As a Habitat Conservation Plan (HCP) under Section 10 of the federal Endangered Species Act, and a Natural Community Conservation Plan (NCCP) under California Fish and Game Code sections 2800 et seq., the BDCP offers a path to regulatory stability for the State and its water users.</p> <p>To that end, CWA anticipates that implementation of the BDCP will increase water supply reliability by building on the extensive body of scientific investigation undertaken to date, developing a transparent and science-driven process that allows for a range of operational outcomes, and establishing a sound adaptive management and monitoring process throughout the 50-year implementation that will enable the Plan to adapt over time to emerging science and the evolving ecosystem. In particular, CWA appreciates that the Plan allows for enough operational flexibility such that increased storage will be facilitated in wet years, thereby compensating for a lack of water in dry years.</p>	<p>The comment states that the CWA believes the BDCP will increase water supply reliability. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please note that the BDCP is no longer the preferred alternative. The preferred alternative is now Alternative 4A and no longer includes an HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Please refer to Response to Comment 1721-3.</p>
1721	5	<p>Funding:</p> <p>The California Water Association (CWA) notes that Conservation Measure (CM) 1, Water Facilities and Operation, is designed to satisfy the first twin goal, water supply reliability, while Conservation Measures 2 through 22 are designed to achieve the second twin goal of ecosystem restoration. Further, CM1 accounts for 65 percent of the BDCP’s total cost of nearly \$24.8 billion, while CM2 through CM22 will require 35 percent of the total cost.</p> <p>CWA agrees with the Legislative Analyst’s Office (LAO) that the cost assumptions for design and construction of the dual conveyance system, habitat restoration, fisheries enhancement, tidal and other natural communities restoration, wetlands restoration, and other conservation measures, plus the discount rates used to compare benefits and costs of alternatives, all appear to be reasonable. Legislative Analyst’s Office, Financing the Bay Delta Conservation Plan, February 12, 2014, p. 3.</p>	<p>The comment states that the CWA agrees with the LAO that the cost assumptions made for the BDCP construction are reasonable. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please note that the BDCP is no longer the preferred alternative. Please refer to Response to Comment 1721-3.</p>
1721	6	<p>The California Water Association (CWA) agrees with the Legislative Analyst’s Office that it would have been useful to include financing costs in the Plan’s \$24.8 billion price tag. CWA recognizes that certain aspects of the BDCP’s financing plan are inherently uncertain, given the reliance on a wide spectrum of contracting agencies, on state funding through taxpayer-funded bonds, and on federal funding approved through Congressional appropriations. However, this risk must be balanced against the risks of not acting to mitigate the potentially catastrophic impacts of land subsidence, saltwater intrusion or seismic events.</p>	<p>The comment states that uncertainties notwithstanding, the CWA agrees with the LAO that it would have been useful to including financing costs in the BDCP’s price tag. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please note that the BDCP is no longer the preferred alternative. Please refer to Response to Comment 1721-3.</p>
1721	7	<p>The California Water Association (CWA) has been supportive of the "beneficiary pays" principle for allocating the costs of the BDCP, with costs for each portion of the Plan being paid for by the parties benefiting from that portion of the Plan. In practice, that generally means that supply reliability will be paid for by water users and water customers, while the ecosystem restoration and other public benefits will be borne by the taxpayer.</p> <p>With respect to the proposed conveyance facilities, the public water agencies participating in the project, that is, the SWP contractors and Central Valley Project (CVP) contractors, will bear the cost of those facilities. Approximately 90 percent of the \$8.73 billion estimated for the costs of conservation, habitat and ecosystem restoration, and other similar measures</p>	<p>The comment states assumptions regarding the source of funds for implementation of the BDCP, based on the “beneficiary pays” principle. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please note that the BDCP is no longer the preferred alternative. Please refer to Response to Comment 1721-3. Also, please see Master Response 5 for more information on project costs and funding.</p>

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1721	8	<p>While the "beneficiary pays" principle is logical and rational in the context of the BDCP, its practical impacts also should be taken into account. While the Plan estimates a per capita cost of \$580 in undiscounted 2012 dollars for the conveyance facilities (Chapter 8; Table 8-44; p. 8-80), this amount is much higher when financing costs are included, and the estimate is applied on a per customer (service account), rather than per capita, basis.</p> <p>For example, if the affected average residential customer's bill increases by \$15-20 per month as a result of CM1, this increase will come on top of recent increases all public water systems have experienced, and they have been met with significant resistance from customers. Moreover, the BDCP cost increases absorbed by water utility customers must not "crowd out" the essential local infrastructure investments (pipe replacement, water treatment, storage, recycling, meter replacement, etc.) that are just as important for both water quality and water supply reliability.</p> <p>The California Water Association hopes the Plan will accommodate the need for these other investments by evaluating 'beneficiary pays' in the context of the continued need in all areas of water infrastructure investments.</p>	<p>The comment states that the cost per capita for implementation of the BDCP is higher when financing costs are included. The comment also asks for consideration of the impacts of the "beneficiary pays" approach when also considering the need to invest in other infrastructure upgrades and replacements. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please note that the BDCP is no longer the preferred alternative. Please refer to Response to Comment 1721-3. Also, please see Master Response 5 for more information on project costs and funding.</p>
1721	9	<p>Water Rights:</p> <p>The California Water Code (Division 2, Section 1000 et seq.) prescribes detailed procedures that govern the appropriation of water from a lake, river, stream, or creek. These provisions require any person or agency seeking to use surface water, without an existing riparian right, to apply for and receive approval for such use from the State Board. Water rights permits granted by the State Board include detailed descriptions of the amounts and conditions that apply to proposed diversions.</p> <p>The SWP and CVP currently operate under water rights permits and decisions issued by the State Board. As conditions of the projects' water right permits and licenses, the State Board requires the SWP and CVP to meet specific water quality, quantity, and operational criteria upstream and within the Delta. The Department of Water Resources and the U.S. Bureau of Reclamation closely coordinate SWP and CVP operations, respectively, to meet these conditions.</p> <p>Implementation of the BDCP will require a change in the points of diversion specified in DWR and Reclamation's water right permits. Otherwise, the BDCP should not affect existing water rights. However, this issue is not clearly addressed in the current draft of the BDCP.</p> <p>Section 5.3.1 of the DEIR/EIS states:</p> <p>"The water supply analysis [in the BDCP] addresses changes to water supply to SWP and CVP water users in the Delta region, upstream of the Delta Region, and Export Service Areas due to implementation of BDCP conveyance facilities (CM1) and other conservation measures, specifically tidal marsh habitat restoration (CM4). The alternatives would modify the operations of the SWP and CVP facilities but would not modify the operations of water resources facilities owned and/or operated by other water rights holders. Therefore, the water supply analysis addresses impacts to DWR, Reclamation, and SWP and CVP contractors, as opposed to other water rights holders, as the BDCP does not include any</p>	<p>Please note that the BDCP is no longer the preferred alternative. The preferred alternative is now Alternative 4A and no longer includes an HCP. Alternative 4A has been developed in response to public and agency input.</p> <p>Please see Master Response 32, Water Rights Issues.</p> <p>With regards to a Change Petition for changes to DWRs and USBRs points of diversion, please refer to the SWRCB webpage for the California Water Fix Change Petition hearing.</p> <p>For more information regarding water rights, please see Master Responses 26 and 32. Although the comment does not raise any environmental issue related to the 2013 DEIR/EIS DWR or the 2015 RDEIR/SDEIS, DWR provides the following additional response to the issues raised in this comment. Section 5.2.1.1., Water Supply, of the 2015 RDEIR/SDEIS indicates that none of the alternatives would modify water deliveries to non-SWP and non-CVP water rights holders, because the proposed project does not include any actions that would affect water availability to any such water rights holders.</p>

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		<p>regulatory actions that would affect any such water rights holders."</p> <p>DEIR/EIS, [Section] 5.3.1 (emphasis added); see also id., [Section] 5.3.1.1 fn. 16 ("As mentioned in Section 5.3.1, the BDCP does not include any regulatory actions that would affect any water rights holders. Therefore, deliveries to senior water rights holders (pre-1914) are not discussed in this chapter and are not included in discussion of model limitations in this section, although they have the utmost priority in receiving surface water supplies.").</p> <p>While these provisions suggest that the BDCP will not affect senior water rights holders, such a cursory analysis is inadequate. CWA therefore requests that the BDCP and DEIR/EIS be revised to clarify that implementation of the BDCP will indeed preserve senior water rights. In particular, given that the BDCP is an HCP under federal law and an NCCP under California law, the documents should explain that the Plan will not affect the water rights of any existing senior water rights holders.</p>	
1721	10	<p>The California Water Association supports the ongoing BDCP efforts and is encouraged by the progress made in the draft Plan and DEIR/EIS. Thank you for the time and effort expended on the BDCP stakeholder and public participation process.</p>	<p>The comment states the CWA's support for the ongoing BDCP efforts. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>
1722	1	<p>The BDCP violates Water Rights Law.</p> <p>Friant Water Authority has raised this issue to the DWR before, but restates it here for the record. The BDCP's conservation measures, most notably the construction of the tunnels (referred to as "CM1" in the documents), also incorporates complex changes to water flow and diversions by making changes to the operations of the Central Valley Project ("CVP") and SWP. The BDCP's depiction of the operation of the CVP and SWP contains numerous technical errors and incorrect assumptions as discussed in greater detail throughout this letter. With respect to water rights, however, the tunnel construction component is premised on impermissible CVP and SWP operations, which effectively retroactively reallocate established water rights belonging to Friant and other water rights holders. However, the law grants DWR no authority to do this. The proposed illegal alteration of water rights infects the entire analysis of the BDCP itself and the EIR/EIS, and for this reason alone, the Plan and the EIR/EIS must be revised.</p>	<p>The State Water Resources Control Board, not DWR, is responsible for decisions relating to water rights. DWR holds water rights approved by the State Water Resources Control Board but does not have the power or authority to issue water rights to others. Additionally, the proposed project does not seek any new water rights nor include any regulatory actions that would affect water rights holders other than DWR and Reclamation. . . DWR and the Bureau have filed for a change in point of diversion with SWRCB for the proposed project.</p> <p>Importantly, all water exported by the SWP and CVP is the subject of the existing water rights of those two agencies. Exports do not come at the expense of other water rights holders. The proposed project and its alternatives analyzed in the EIR/EIS only include the use of water from existing SWP and CVP water rights or voluntary water transfers from other water rights holders. The proposed project and its alternatives do not reduce the protections for other water right holders.</p> <p>For more information regarding changes in Delta exports please see Master Response 26 and for water rights see Master Response 32.</p>
1722	2	<p>California water law is based on the priority system of state water rights. The appropriative right was developed under the early mining-law principles, which favored the scarce resource allocation policy of first in time having the highest priority to put water to use. (See, e.g., Pleasant Valley Canal Co. v. Borror, 61 Cal. App. 4th 742 (1998).) Accordingly, when water shortages occur, they are addressed by implementing the water rights priority system. The BDCP cannot simply invent new water law by "balancing" (EIR/EIS, p. 5B-9), or, more accurately, "re-balancing" -- it must apply the priority rights and analyze the impacts accordingly.</p>	<p>The proposed project will be implemented in a manner consistent with California water law. See response to comment 1722-1 for a discussion of water rights and delta exports associated with proposed project implementation and Master Response 32 concerning water rights.</p>
1722	3	<p>The EIR/EIS notes, in general terms, the State Water Resources Control Board's ("SWRCB") primary regulatory authority over public trust resources, and the SWRCB's authority under the California constitution to prevent waste of these resources by ensuring that they are reasonably and beneficially used. (EIR/EIS, p. 8-117.) The EIR/EIS alludes to the SWRCB's ability to regulate permits and water rights in furtherance of this trust management, and seems to suggest that the public trust doctrine will allow reprioritization of water rights. (Id.) Not so. The public trust doctrine will not apply to retroactively reallocate established</p>	<p>Please see Response to Comment 1722-1.</p> <p>For more information regarding changes in Delta exports please see Master Response 26 and for water rights see Master Response 32. Additionally, with regards to public trust, please see Master Response 31. Also, with regards to beneficial use of water, please see Master Response 34.</p>

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1722	4	<p>The EIR/EIS is Inadequate under CEQA and NEPA.</p> <p>The project is a proposed major federal action and must comply with NEPA regulations and guidelines. (42 U.S.C. Section 4332.) Section 102(2) of NEPA requires the preparation of an environmental impact statement for any major federal action significantly affecting the quality of the human environment. An EIS must provide a full and fair discussion of a project’s significant environmental impacts and must inform decision makers and the public of the reasonable alternatives to a project that would avoid or minimize adverse impacts or enhance the quality of the human environment. (40 C.F.R. Part 1502.1.)</p> <p>An EIS that does not provide a full and fair discussion of the significant environmental impacts of a proposed action and precludes a meaningful analysis of the significant environmental impacts of a project and the reasonable alternatives to the project is inadequate to meet the requirements of NEPA. (40 C.F.R. Part 1502.9.) An inadequate EIS, or portion thereof, must be revised to comply with the requirements of NEPA and recirculated to allow for proper public comment. (40 C.F.R. Part 1502.9.)</p> <p>Likewise, under CEQA, an EIR is an informational document designed to provide public agencies and the public with detailed information about the impacts that a proposed project is likely to have on the environment, analyze the ways in which the significant effects of a project might be minimized; and identify alternatives to the project. (Pub. Resources Code [Sections] 21002, 21002.1(a), 21061; 14 Cal Code Regs [Section] 15362; see also Pub. Resources Code [Sections] 21100, 21150.) If an EIR is "so fundamentally and basically inadequate and conclusory in nature" that public comment on the draft is essentially meaningless, or if significant new information is added to an EIR, it must be recirculated for further public review. (Laurel Heights Improvement Ass’n v Regents of Univ. of Cal., 6 Cal.4th 1112 (1993); 14 Cal Code Regs [Section] 15088.5(a).)</p> <p>Here, the EIS/EIR for the project fails to meet the requirements of both NEPA and CEQA.</p>	<p>The comment restates the law without providing any specificity. Thus, it is difficult to provide any responses in response.</p> <p>However, the Lead Agencies are following the appropriate legal process and are complying with CEQA and NEPA in preparing the EIR/EIS for the proposed project. These agencies readily acknowledge, however, that the document addresses a number of topics for which some scientific uncertainty exists. Such uncertainty can give rise to differing opinions as to what conclusions may be reached.</p> <p>The proposed project is a joint RDEIR/SDEIS prepared in compliance with the requirements of CEQA and NEPA. Before the selection and approval of an alternative considered, the Lead Agencies must comply with the necessary state and federal environmental review requirements. This document, along with the BDCP Draft EIR/EIS, and expected Final EIR/EIS are intended to provide sufficient CEQA and NEPA support for approval of the proposed project or any of the action alternatives for either compliance strategy. As implementation of the proposed project or any of the action alternatives will require permits and approvals from public agencies other than the Lead Agencies, the CEQA and NEPA documents are prepared to support the various public agency permit approvals and other discretionary decisions. These other public agencies are referred to as responsible agencies and 20 trustee agencies under CEQA (State CEQA Guidelines Sections 15381 and 15386) and cooperating agencies under NEPA (e.g., USACE and EPA).</p>
1722	5	<p>The EIR/EIS fails to accurately describe the project.</p> <p>"An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." (County of Inyo v. City of Los Angeles, 71 Cal. App. 3d 185, 192 [1977].) The proposed BDCP and draft BDCP EIR/EIS do not meet this standard. Because of</p>	<p>The comment restates the law without providing any specific comments regarding the 2015 RDEIR/SDEIS or the 2013 DEIR/DEIS. Thus, it is difficult to provide any responses to the comment.</p> <p>However, the project description is legally adequate. Under CEQA, "[t]he description of the project ... should not supply extensive detail beyond that needed for evaluation and review of the environmental</p>

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		<p>the enormous data gaps in the definition of the project, the BDCP’s environmental analysis does not accurately evaluate the BDCP. Even though the environmental document are voluminous, the project is so ill-defined that the analysis is not useful or relevant. Before the draft BDCP and its EIR/EIS can be legitimately released for public review, the proponents need to describe in sufficient detail what the elements of the project are and how they will work.</p> <p>Without an accurate project description, there can be no meaningful review of environmental impacts. Here, the project description is so inadequate as to actively mislead the public. The project is described as a habitat conservation plan, which cloaks as a "covered activity" a massive infrastructure project that would involve over 35 miles of tunnels and conveyance structures occupying thousands of acres and pumping massive amounts of water from locations that are not identified. (EIR/EIS, p. 3-27.) The tunnels and associated conveyance structures are the driving force behind this project and must be presented as such.</p>	<p>impact [.]” (State CEQA Guidelines, § 15124.) “A general description of a project element can be provided earlier in the process than a detailed engineering plan and is more amenable to modification to reflect environmental concerns.” (Dry Creek Citizens Coalition v. County of Tulare (1999) 70 Cal.App.4th 20, 28.) “The ‘general description’ requirement for the technical attributes of a project is consistent with the other CEQA mandates to make the EIR a user-friendly document.” (Ibid.) “The EIR must achieve a balance between technical accuracy and public understanding.” (Ibid.)</p> <p>The only mandatory components of a Project Description in an EIR are the following:</p> <p>(a) The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map.</p> <p>b) A statement of the objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project.</p> <p>(c) A general description of the project’s technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities.</p> <p>(d) A statement briefly describing the intended uses of the EIR.</p> <p>(1) This statement shall include, to the extent that the information is known to the Lead Agency,</p> <p>(A) A list of the agencies that are expected to use the EIR in their decision making, and</p> <p>(B) A list of permits and other approvals required to implement the project.</p> <p>(C) A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies. To the fullest extent possible, the lead agency should integrate CEQA review with these related environmental review and consultation requirements.</p>
1722	6	<p>An EIR/EIS is an informational document that must inform the public of the potential impacts resulting from the proposed project and the reasonable ways to avoid or mitigate those impacts. At the outset, an EIR/EIS must have a clear table of contents and executive summary. (14 Cal. Code Regs. [Sections] 15122, 15123.) The BDCP EIR/EIS fails to provide an adequate summary of the proposed actions and their consequences. It is difficult to discover from reading the Executive Summary of this "Conservation Plan" EIR/EIS what physical changes to the environment are actually proposed. Rather, the Executive Summary makes numerous references to "covered activities and associated federal actions" as follows:</p> <p>"The BDCP includes covered activities and associated federal actions. Covered activities are those actions that are carried out by nonfederal entities, such as DWR, and that are expected to be covered by regulatory authorizations under Endangered Species Act (ESA) and Natural Community Conservation Planning Act (NCCPA). The covered activities consist of activities in the Plan Area associated with the conveyance and export of water supplies from the SWP’s Delta facilities and with implementation of the BDCP conservation strategy. Each of these activities falls into one of six categories: (1) new water conveyance facilities construction, operation, and maintenance; (2) operation and maintenance of SWP facilities; (3) nonproject diversions; (4) habitat protection, restoration, creation, enhancement, and management; (5) monitoring activities; and (6) research.</p>	<p>See response to comment 1722-4 for discussion of how the RDEIR/SDEIS has been prepared in compliance with CEQA and NEPA. For additional information on the length and complexity of the document please see Master Response 38.</p> <p>For more information on the public outreach efforts made during the BDCP and EIR/EIS process, please see Master Response 40.</p>

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		<p>"Associated federal actions are those activities that are carried out, funded, or authorized by Reclamation within the Plan Area and that would receive appropriate ESA coverage through Section 7. These actions would be (1) operation of existing CVP Delta facilities to convey and export water in coordinated operation with the SWP after the BDCP is approved and implemented, (2) associated maintenance and monitoring activities, and (3) the creation of habitat. The federal actions by Reclamation would not be covered activities for the purposes of the ESA Section 10(a)(1)(B) permit. These federal actions are actions that occur within the Delta that would be coordinated with DWR to support DWR's compliance with the ESA Section 10 permit. Reclamation's activities are subject to ESA Section 7."</p> <p>(EIR/EIS, P. ES 1-16 to 1-17)</p> <p>Apparently, the 35 miles of tunnels and associated conveyance structures would be subsumed under the category of "new water conveyance facilities" but the project description should not function as a guessing game -- the precise project should be described. Furthermore, listing "new water conveyance facilities" as one of several categories, along with activities such as "research," fails to provide sufficient weight and attention to this massive infrastructure project.</p> <p>An EIR must be "prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences." (Dry Creek Citizens Coalition v. County of Tulare, 70 Cal. App.4th 20, 26 (1999).) The executive summary fails to provide a succinct, clear statement of the project, and the remainder of the EIR/EIS does not improve on this absence.</p> <p>Similarly, NEPA requires a description of "the underlying purpose and need" to which the project responds. (40 C.F.R. [Section] 1502.13). From the above project description, it is not at all clear that the construction of enormous conveyance systems actually responds to the stated purpose and need for the BDCP.</p>	
1722	7	<p>The Description of the Project as a Conservation Project is Misleading and Hinders Analysis.</p> <p>The project description purports to describe the entire BDCP, which itself purports to be a conservation plan. It is not readily apparent from the executive summary project description that the BDCP actually involves the construction of massive water conveyance infrastructure. The EIR/EIS lacks a section entitled "Project Description" where one would hope to find the proposed physical changes in the environment described. (14 Cal. Code Regs. [Section] 15124.) Moreover, the EIR/EIS purports to be a program-level analysis of most aspects of the BDCP, but then purports to give project-level and site-specific analysis of the proposed tunnel locations. There is minimal description about the actual design of the massive infrastructure projects proposed, in chart format. (See EIR/EIS, Appendix 3C.) Although this might be acceptable for certain types of projects, it is inappropriate for a construction project of this magnitude. [Footnote 3: See, e.g., comments on the administrative draft EIR/EIS from the United States Environmental Protection Agency ("EPA") and the United States Fish and Wildlife Service ("USFWS"), published on July 18, 2013 and are available at this link: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Federal_Agency_Comments_on_Consultant_Administrative_Draft_EIR/EIS_7-18-13.sflb.ashx (last accessed July 28, 2014.)] At this scale, such significant and unavoidable impacts will occur that the EIR/EIS warrants an accurate and detailed project description of the tunnels and related infrastructure. This is particularly so where technical design elements could have a</p>	<p>Please note that the preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP or conservation measures. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Please see Master Response 5 for additional detail on the BDCP and the alternatives involving an HCP component. The proposed project was developed to meet the standards of the federal and state Endangered Species Acts. For more information on the alternatives development see Master Response 4. In addition, please note that all comments received during the 2013 and 2015 public comment period are included in the FEIR/EIS. Please refer to the table of commenters to locate the letter of interest.</p> <p>See Master Response 2 for a discussion of the project versus program level analysis. To the extent that implementation of any alternative would lead to significant environmental impacts, such impacts are described in individual resource chapters throughout the EIR/EIS, and would be minimized and mitigated to the degree feasible. See Master Response 22.</p>

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		lasting and detrimental effect on endangered species such as the salmonids.	
1722	8	<p>The project description barely acknowledges the potential impacts on long-held water rights. Although adjusting the way these water rights are fulfilled may seem abstract, it is within the scope of the project and has very real environmental impacts, aside from any issues of legal feasibility as discussed below. A complete project description is necessary to ensure that all of the project's environmental impacts are considered. (City of Santee v. County of San Diego, 214 Cal.App.3d 1438, 1450 (1989).) Here, the EIR/EIS alludes to water rights in various sections [Footnote 4: See, e.g., EIR/EIS, pp. 6-4 to 6-7; pp. 6-37 to 6-38; p. 6-155; pp. 1C.2-10 to 1C.2-12; 1C.4-38; and Appendix 1E generally.], but it does not address the impact from less reliable water.</p>	<p>See response to comment 1722-1 for a discussion of water rights and delta exports associated with proposed project implementation. Please see Master Response 32 concerning water rights.</p>
1722	9	<p>The project description is still evolving given the uncertainties present in the draft Implementing Agreement.</p> <p>An important component of the Plan is the draft Implementing Agreement which sets forth how the 22 Conservation Measures comprising the Plan will actually be implemented. This is crucial information for environmental analysis because 21 out of the 22 Conservation Measures at the heart of the Plan are only reviewed at the program level, even though they are critical to mitigating the effects of the tunnel construction. The EIR/EIS recognizes that in order to realize the Conservation Measures, there must be "substantial coordination and cooperation" by all involved in the project. (EIR/EIS, p. 7-2.)</p> <p>Additionally, the draft Implementing Agreement is required under the CESA, and as such it should have been part of the project and undergone simultaneous environmental review. (Cal. Pub. Resources Code [Section] 21082.2[c].) Instead, the draft Implementing Agreement was released on May 30, 2014, well after publication of the Draft EIR/EIS, and therefore the EIR/EIS could not have analyzed it as part of the "whole project" as required under CEQA. (14 Cal. Code Regs. [Section] 15378[a].) The EIR/EIS states only that "[t]he release of the draft BDCP and Implementing Agreement concurrent with the publication of the draft EIR/EIS satisfies" the requirements of an Habitat Conservation Plan (HCP) under the Endangered Species Act (ESA). (EIR/EIS, p. 32-9). Whether or not this late release satisfies the ESA, it does not satisfy the CEQA and NEPA requirements that the environmental documents include a clear project description prior to their release for public review.</p> <p>The draft Implementing Agreement does not actually describe how the project will be implemented. Instead, it echoes the EIR/EIS's vague framework for making future decisions through the use of a "decision tree" process. (Draft Implementing Agreement, p. 24; EIR/EIS, Appendix 3A, Sec. 3A.10.6.) The decision tree would allow parties to the Implementing Agreement to make certain decisions about water flows, diversions, adaptive management, and changes to conservation measures based on future occurrences. In short, the future outcomes of the decision tree ultimately become so vague and include so many potential scenarios that the process thwarts any meaningful analysis. Instead, the decision tree process, left largely undefined in the draft Implementing Agreement, appears to allow for a much wider range of scenarios than were actually analyzed in the EIR/EIS. Moreover, parties to the agreement have not allocated responsibilities outlined in the Agreement. This open-endedness allows for a constantly shifting interpretation and application, defying the requirement for a "stable" project description. In other words, this EIR/EIS not only defers required mitigation -- which cannot be accurately identified given the shifting project description -- it also defers the actual analysis of the proposed project.</p>	<p>Please note, as described in response to comment 1722-5, the BDCP (Alternative 4) is no longer the preferred alternative. The preferred alternative is now Alternative 4A and no longer includes an HCP. Alternative 4A has been developed in response to public and agency input and no longer requires an Implementing Agreement (IA).</p> <p>Public comments received on the draft IA will help inform changes that may be made to the agreement in the event that an alternative is selected that includes BDCP or a similar NCCP. For information about the implementation structure of the Preferred Alternative, see Master Response 5 concerning the BDCP.</p> <p>See Master Response 4 for additional information on alternatives development.</p> <p>For additional information on the decision tree process please see Master Response 44.</p>

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1722	10	The late release of the Implementing Agreement, a crucial component of the project, constitutes piecemeal review prohibited by CEQA and NEPA. (40 C.F.R. [Section] 1502.25.) The fact that the comment period was extended to allow for public review of the draft Implementing Agreement does not address the fundamental problems of vagueness and uncertainty that are present in the documents, nor does it correct the failure to include the components of the Implementing Agreement in the project description for purposes of the EIR/EIS.	Please see also response to comment 1722-9.
1722	11	The Proposed Project is Legally and Otherwise Infeasible and Thus the DWR and Reclamation Lack Authority to Proceed. The project proposes to illegally alter water rights, and thus at its core the project is legally infeasible. The illegal rearranging and reprioritizing of these water rights is at the heart of the project, which renders the entire project legally infeasible. The Bureau of Land Management ("BLM") and Reclamation have no authority to conduct illegal activity. (Marin Mun. Water Dist. v KG Land Cal. Corp., 235 Cal.App. 3d 1652, 1666, (1991) [legal uncertainty about ability to implement alternative justified determination of infeasibility].) An alternative also may be found legally infeasible if its adoption is beyond the powers conferred by law on the agency. (See Kenneth Mebane Ranches v Superior Court, 10 Cal.App. 4th 276, 291(1992).)	As described in response to comment 1722-1, the State Water Resources Control Board, not DWR, is responsible for decisions relating to water rights. DWR holds water rights approved by the SWRCB but does not have the power or authority to issue water rights to others. Additionally, the proposed project does not seek any new water rights nor include any regulatory actions that would affect water rights holders other than DWR and Reclamation. See response to comment 1722-1 for a discussion of water rights and delta exports associated with proposed project implementation.
1722	12	The DWR may not appropriate water in a way that harms the interests protected by the public trust doctrine. (Audubon Society v. Superior Court, 33 Cal.3d 419 (1983).) The proposed project is also infeasible because Alternative 4 relies on water transfers of 1.3 million acre-feet to generate sufficient water to supply all the needs identified by the project. This level of water transfers has never been attained, even in severely dry years such as the current one. There is no basis for speculating that this volume of water could or would be transferred in the future. Since the proposed project relies on this unrealistic level of water transfers, it is infeasible.	Please see response to comment 1722-5 regarding the new preferred alternative. As described in response to comment 1722-1, the State Water Resources Control Board, not DWR, is responsible for decisions relating to water rights. DWR holds water rights approved by the State Water Resources Control Board but does not have the power or authority to issue water rights to others. Additionally, the proposed project does not seek any new water rights nor include any regulatory actions that would affect water rights holders other than DWR and DWR, and SWP and CVP contractors. DWR and the Bureau have filed for a change in point of diversion with SWRCB for the proposed project. The SWRCB will be responsible for making decisions during that process relating to the protection of public trust resources. See response to comment 1722-1 for a discussion of water rights and delta exports associated with proposed project implementation. Please see also Master Response 13 for a discussion of how the proposed project is in compliance with the public trust doctrine.
1722	13	The proposed project is economically infeasible because the Governor has indicated his intent not to include bond funding for many of the conservation projects that the BDCP contemplates. It is not affordable for the local public agency sponsors to cover the massive costs of these projects, which are expected to exceed \$25 billion. There is no evidence that this amount of state or federal money will be appropriated to cover these expenses, and it is not legal for the federal government to assign costs to its contractors unless they are receiving commensurate benefits from the project. Consequently, the BDCP is without adequate funding sources, and as currently envisioned it appears to be financially infeasible.	Please see response to comment 1722-5 regarding the new preferred alternative. . For detailed responses on the primary issues being raised with regard to the BDCP or Alternative 4, please see Master Response 5.
1722	14	The Project Model does not identify the Proposed Project's Effects. The BDCP EIR/EIS relies heavily on modeling of future conditions for most of its impact analyses, including the analysis for how water supply and reservoir operations are modified by the BDCP, and how water quality, water levels, temperature, Delta flows, and fish response are subsequently affected. The BDCP uses a 2010 version of the CalSim II model, even though an updated 2013 version of the CalSim II model has been used by other	The modeling for the proposed project was based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, formed the basis for all the Alternatives modeled in the EIR/EIS. However, given the models continue to evolve, in August 2011, several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the BDCP Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR,

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		<p>agencies (including DWR) for other projects. (Modeling Review, p. 3., see ATT 1). In order to better understand the foundation on which the entire BDCP analysis rests, Friant Water Authority and other stakeholders commissioned an independent analysis of the BDCP's model. The Reviewers found that "The BDCP Model contained erroneous assumptions, errors, and outdated tools, which resulted in impractical or unrealistic CVP and SWP operations. The unrealistic operations, in turn, do not accurately depict the potentially real effects of the BDCP." (Modeling Review, p. 1).</p>	<p>Reclamation and USFWS modelers. This update was performed to verify if the compiled model improvements have altered the incremental changes between the Alternative 1 and the Existing Conditions and No Action Alternative relative to the 2010 modeling. The findings from the 2011 update showed that the results remained consistent with the 2010 modeling. Therefore, the Alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability. Similarly, when Alternative 4 was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4 compared to the No Action Alternative were similar to the Alternative 4 results.</p> <p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30 about the modeling approach.</p>
1722	15	<p>The Reviewers identified that the 2010 version of the CalSim II model used in the BDCP analysis contains significant errors and bugs that were subsequently corrected in the 2013 update to the model. (Modeling Review, p. 3, see ATT 1). For example, the 2010 model uses an incorrect parameter for the Sacramento River flow requirement for Delta inflow. (Id.) Additionally, the 2013 version of the model contains updates that reflect regulatory changes which, in turn, affect the modeling of water operations. Inexplicably, BDCP analysis did not re-run the model using the updated and corrected 2013 version, and thus at the outset the foundation for the environmental analysis is flawed, and the various layers which build upon that foundation are suspect and likewise flawed. The updated 2013 model has been utilized by DWR for other projects, including DWR's 2013 State Water Project Water Delivery Reliability Report, and it is unclear why the EIR/EIS does not based its analysis using the 2013 model.</p> <p>Additionally, the Reviewers further refined the 2013 model to incorporate additional assumptions and updates in an effort to attain a more accurate analysis than the unmodified 2013 model would produce. (Modeling Review, p. 21.) The Reviewers' efforts in refining the 2013 model were sufficiently successful that both DWR and Reclamation have since incorporated the modified 2013 model into their own analyses. (Modeling Review, p. 20). The Reviewers then used the modified 2013 model to conduct a more accurate analysis of the BDCP's anticipated impacts and effects.</p> <p>As described in great detail in the Modeling Review (pp. 10-13), the 2010 model used by the BDCP applied incorrect climate change assumptions, which yielded nonsensical results. For example, in the Upper San Joaquin River basin, inflow to Millerton Lake is expected to decrease under future climate scenarios. However, an error in the BDCP Model causes the amount of stored water in Millerton Lake to increase by inappropriately reducing water deliveries to the Friant Division. The Reviewers note that the BDCP erroneously overestimates Millerton Lake storage, which causes an overestimation of reservoir releases and available water downstream. Because overall CVP operations and the San Joaquin River are interconnected, this error causes problems throughout the CVP system. With the coordinated operations of the CVP and SWP, this error can affect the SWP system. (Id. at 11.) The result is an incorrect model, which should be re-run with the modified 2013 CalSim II model.</p>	<p>The modeling for the proposed project and the EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in Alternatives 2 through 9 in the EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the Alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the EIR/EIS. Similarly, when Alternative 4 was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4 as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4. It should be noted that the modeling used in the EIR/EIS must be used in a comparative manner and not to define absolute values.</p> <p>The climate change assumptions were consistent across all the EIR/EIS Alternatives including the No Action Alternative. As shown in the EIR/EIS, San Joaquin River operations remain unchanged under the action alternatives compared to the No Action Alternatives. Furthermore, the error in the Millerton climate-modified inflow was found to only affect Millerton storage and flows in the San Joaquin River, and it had only minor impacts to the Delta and Sacramento River operations.</p> <p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30 about the modeling approach.</p>
1722	16	<p>The BDCP model fails to consider that in the event of worsened drought conditions, public agencies would likely cope by putting in place adaptation measures. Types of adaptation measures could include (1) updating operational rules regarding water releases for flood protection; (2) calling for mandatory conservation and/or relaxation of regulatory criteria in emergency drought declarations; and (3) revisiting rules by which the CVP and SWP allocate</p>	<p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30 regarding the modeling approach. Please see Master Response 47 for information on drought operations and the proposed project.</p>

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		<p>water during shortages and operate more conservatively in wetter years. (Modeling Review, p. 4, see ATT 1). These types of measures are reasonable, foreseeable, and could have been modeled in order to provide a more realistic assessment of future conditions under climate change both with and without the project. For example, during this severely dry year, for the first time ever, Reclamation changed several of its historic policies and procedures related to the delivery of the vested priority obligation owed to the Exchange Contractors. Likewise, this spring, DWR and Reclamation submitted multiple joint petitions to the SWRCB for several "temporary urgency change petitions" to modify the water quality regulations that would otherwise be in place, and the SWRCB granted each of these petitions. However, even though the BDCP proposes fundamental changes to the way in which the State Water Project and the Central Valley Project are operated, the BDCP modeling of the no project/no action scenario analyzed only the predicted changes in precipitation and temperature, without any other changes due to foreseeable regulatory reactions. The result is that the BDCP model predicts dire water shortages, which, in turn, provides an unrealistic doomsday future no project/no action scenario against which the future project is then favorably compared. This is fundamentally misleading to the public, and additional modeling should be performed (with the modified 2013 CalSim II model) which considers more realistic future no project/no action scenarios.</p>	
1722	17	<p>The effects of the errors present in the BDCP model are pervasive. Friant Water Authority urges the lead agencies to take the necessary time to update and correct the foundational modeling performed, as well as all the modeling analyses which build on that foundation. Because the BDCP itself relies so heavily on complex modeling, the EIR/EIS cannot adequately assess the environmental impacts until these errors and assumptions are corrected. By extension, if the underlying project is mischaracterized because of modeling errors, and the EIR/EIS does not consider and address these errors, the EIR/EIS violates CEQA and NEPA mandates to provide an informational document for the public's consideration. Accordingly, once the BDCP is revised to correct the numerous fundamental errors, the EIR/EIS should be revised and recirculated to allow sufficient time for public review and comment.</p>	<p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30 for the modeling approach. Please see also responses to comments 1722-28 and 1722-29.</p>
1722	18	<p>The EIR/EIS is fundamentally flawed and misleading in nearly every category.</p> <p>The project- and program-level review of project components is inadequate and misleading.</p> <p>The EIR/EIS couches a massive infrastructure project as being merely a covered activity that is incidental to a conservation plan. However, only the massive infrastructure project receives a project-level analysis (EIR/EIS, p. 4-2). Although mixing project- and program-level review can be appropriate under some circumstances, the mixed level review is improper the way it is conducted in the BDCP EIR/EIS.</p> <p>Here, the mixed program- and project-level obscures analysis of the mitigation for the tunnels, which is evaluated at the project level. Of Conservation Measures 2 through 22, the EIR/EIS states that "more detailed, site-specific analysis and site-specific environmental documents will be prepared later, prior to implementation of specific projects, as the BDCP is implemented over time, as appropriate." (DEIR/EIS, p. 3-2.) This is troublesome because the 21 other conservation measures would appear to comprise the heart of the Bay Delta Conservation Plan. Notably, the tunnel is one of the covered activities which requires take authorization under the California Endangered Species Act/Federal Endangered Species Act; the 21 other Conservation Measures are also required as part of this take authorization. However, because those 21 Conservation Measures only receive general program-level</p>	<p>Please see response to comment 1722-5 regarding the new preferred alternative. See Master Response 4 for more information on alternatives development and for additional information on CMs please see Master Response 5. Please also see Final EIR/EIS, Appendix 3B.</p> <p>For more information regarding project and program level analysis please see Master Response 2.</p>

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		<p>review, it is impossible to tell what environmental impacts the tunnels will have on those conservation efforts.</p> <p>For example, the tunnel construction (under the preferred alternative 4) requires the conversion of agricultural land to habitat restoration under conservation measure 22 (CM22). This has the potential to significantly impact water quality because converting agricultural land can "increase accumulation of organic sediments that are known to enhance methylmercury bioaccumulation in biota in the restored habitat." (EIR/EIS, p. 8-447.) In addressing this impact, the EIR/EIS recognizes that another conservation measure, CM12, has potential to mitigate these water quality impacts, but states that "the uncertainties related to site specific restoration conditions ... result in this potential impact being considered significant. No mitigation measures would be available until specific restoration actions are proposed. Therefore this programmatic impact is considered significant and unavoidable." (Id.) Stated differently, the tunnel construction requires conversion of agricultural land to restored habitat, a process which could adversely impact water quality. This impact could be mitigated, but site-specific analysis of the proposed restoration has not been undertaken because the restoration was only considered at a program level. Thus, the use of a combination project- and program-level review, in this case, effectively results in piecemeal project analysis and deferral of mitigation.</p> <p>A program-level review is appropriate to consider broad issues for related actions in the early stage of planning process. (14 Cal. Code Regs. [Section] 15168(b)(1)-(4).) Under NEPA, a programmatic EIS requires "sufficient detail to foster informed decision-making." (Pacific Rivers Council v. U.S. Forest Service, 668 F.3d 609, 622-623 (9th Cir. 2012).) Here, Conservation Measures receiving program-level review are either poorly defined, require future environmental analysis, or are otherwise uncertain.</p> <p>For example, Conservation Measure 2 (CM2) is the Yolo Fisheries Bypass Enhancement Plan ("Yolo Bypass Plan"), for which a separate EIR/EIS will be completed. (BDCP, p. 3.4-48). Over the next several years, the Yolo Bypass Plan "will further refine CM2 and the component projects that will be evaluated. ... During their development, the component projects will be evaluated, individually or grouped as alternatives, to ensure that they will provide the greatest biological benefit to the covered fish species, consistent with the goals of this measure and the biological goals and objectives of the Plan." (Id.) However, because this Conservation Measure remains so undefined, it is impossible to understand how the Yolo Fisheries Bypass Enhancement Plan would impact the species being affected by the new diversions created by the tunnels. Likewise, it is impossible to know whether the Yolo Bypass Plan's goals of "providing the greatest biological benefit to the covered fish species" will be achieved at all in light of the vague program level review, nor can it be ascertained how the Bypass operations would affect SWP and CVP operations in terms of timing, volume, and delivery of water.</p>	
1722	19	<p>While the EIR/EIS purports to conduct a more detailed project-level review of the tunnels, it nonetheless lacks site-specific information necessary for assessing more localized environmental impacts. For example, site-specific assessment of ground settling impacts from construction of the tunnels has yet to be assessed. (EIR/EIS, 9-182.) Likewise, the siting of power supply infrastructure to meet the significant anticipated energy need, particularly during the construction phase, has not yet been determined. (BDCP, Appendix 5.J.C, Table 1.)</p> <p>Even two lead agencies, the U.S. Environmental Protection Agency EPA() and the U.S. Fish</p>	<p>For more information regarding project and program level analysis please see Master Response 2. Please see also Master Response 5 for discussion on CMs. Please also see Final EIR/EIS, Appendix 3B. Please note that all comments received during the 2013 and 2015 public comment period are included in the FEIR/EIS. Please refer to the table of commenters to locate the letter of interest.</p> <p>Please see response to comment 1722-5 regarding the new preferred alternative. See Master Response 4 for more information on alternatives development.</p>

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		<p>and Wildlife Service (USFWS), have commented on the lack of specificity regarding CM1, the tunnel construction Conservation Measure. In its comments on the administrative draft EIR/EIS, the EPA stated that "[t]he level of engineering detail provided for the tunnels, however, is not commensurate with the level of site-specific information typically provided in an EIS for a project that will require federal permits." (EPA comments, Sec. V). Similarly, the USFWS commented that the EIR/EIS "will need a clear and concise project-level description of the water conveyance facilities ..., including a description of the physical, chemical, and biological changes resulting from CM1." (USFWS comments "2.3 Incomplete Project Description", p.5). [Footnote 5: EPA and USFWS comments, published July 18, 2013, available at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Federal_Agency_Comments_on_Consultant_Administrative_Draft_EIR/EIS_7-18-13.sflb.ashx (last accessed July 28, 2014.)] Despite receiving these comments on the administrative draft, the EIR/EIS still lacks adequate project-level review of the apparent primary "project" of the BDCP -- the construction of the tunnels. Although combining project- and program-level reviews is sometimes appropriate, the way it is done in the BDCP EIR/EIS violates CEQA and NEPA.</p>	
1722	20	<p>The Alternatives Presented are Inadequate.</p> <p>The BDCP EIR/EIS purports to discuss an array of alternatives in Chapter 3. These alternatives include the no action alternative, the preferred alternative (Alternative 4), and 15 other alternatives proposing construction of large-scale water conveyance infrastructure with varying configurations, capacities, operational criteria, and accompanying conservation measures. Although lengthy, this discussion is inadequate because there is little informative comparative analysis, and every alternative (except the no action/no project alternative) includes the construction of enormous water conveyance systems that have the potential to cause serious harm to species and result in significant problems of deferred mitigation, among other issues. The alternatives analysis should have included consideration of actual alternatives to the construction of tunnels, not merely variations of the same massive infrastructure project with slightly different operating scenarios.</p>	<p>The alternatives included in the FEIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. 15 alternatives and 3 additional subalternatives were analyzed in the EIR/EIS and the RDEIR/RSEIS respectively. Four major alignments have been included in the EIR/EISS: Through-Delta, East of the Sacramento River, West of the Sacramento River, and a Tunnel under the Delta. Many additional proposals by public and private individuals and organizations have also been evaluated and described in Chapter 3 of the EIR/EISS and Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1. Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project. A comparison table across all alternatives is included in the Executive Summary of the FEIR/EIS. Regarding development of alternatives for the EIR/EIS, a description of the process the Lead Agencies followed to develop and screen alternatives is provided in Master Response 4. For more information regarding water demand management please see Master Response 6.</p>
1722	21	<p>The Document Does Not Consider a Reasonable Range of Alternatives Under CEQA.</p> <p>Under CEQA, an EIR must describe a reasonable range of alternatives to the proposed project, or to its location, that would feasibly attain most of the project's basic objectives while reducing or avoiding any of its significant effects, and must evaluate the comparative merits of those alternatives. (14 Cal. Code Regs. [Section] 15126.6(a).) The alternatives analysis has been described as "the core of an EIR." (Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553, 564 (1990).)</p> <p>An EIR's analysis of alternatives and mitigation measures must focus on those alternatives with the potential to avoid or lessen a project's significant environmental effects. (Pub. Resources Code [Section] 21002; 14 Cal. Code Regs. [Section] 15126.6(a)-(b).) The alternatives discussed in an EIR should be ones that offer substantial environmental advantages over the proposed project. (Citizens of Goleta Valley v. Board of Supervisors, supra, 52 Cal.3d at 566.)</p> <p>Here, the alternatives presented in Chapter 3 all include various forms of massive</p>	<p>The alternatives included in the FEIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. 15 alternatives and 3 additional subalternatives were analyzed in the EIR/EIS and the RDEIR/RSEIS respectively. Four major alignments have been included in the EIR/EISS: Through-Delta, East of the Sacramento River, West of the Sacramento River, and a Tunnel under the Delta. Many additional proposals by public and private individuals and organizations have also been evaluated and described in Chapter 3 of the EIR/EISS and Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1. Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project. A comparison table across all alternatives is included in the Executive Summary of the FEIR/EIS. Regarding development of alternatives for the EIR/EIS, a description of the process the Lead Agencies followed to develop and screen alternatives is provided in Master Response 4. For more information regarding water demand management please see Master Response 6.</p>

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		<p>conveyances with varying operational scenarios. Although these various infrastructure alternatives are presented with a great amount of information regarding operations assumptions and locational differences, there is little comparative analysis that evaluates their relative merits. Because of the complexity of these different infrastructure alternatives, the EIR/EIS should have included a comprehensive comparison of the effects of each. Moreover, none of the alternatives consider that the contemplated changes to SWP and CVP operations may be prohibited by existing water rights, as outlined in the Friant [Water Authority] Issues Analysis. None of them analyze reduced amounts of water diverted upstream of or within the Delta. And, none of them (except the required no project alternative) consider a more moderate approach to addressing the objectives of habitat restoration and water reliability, or any other alternative approach for that matter.</p> <p>The stated purpose of the EIR/EIS is "to restore and protect ecosystem health, water supply reliability, and water quality within a stable regulatory framework." (EIR/EIS, Chapter 2, p. 2-1.) Had the EIR/EIS stated that the purpose of the project was to construct tunnels, then one can imagine that all the alternatives would be variations on building tunnels. However, given the stated purpose is a habitat conservation plan with the co-equal goals, then the EIR/EIS must analyze true alternatives to achieve those project objectives. At a minimum, a more reasonable range of alternatives should have included at least one that does not include the implementation of a \$25 billion, decade long construction project with significant potential to disrupt habitat. Other alternatives might include, for example, increasing the size of existing reservoirs, construction of additional dams and reservoirs, desalination plants to supply some of the water needs south of the Tehachapi mountain ranges, or programs to increase urban stormwater capture and reuse.</p>	
1722	22	<p>In the EIR/EIS, the alternatives discuss improved management of biological resources in connection with the construction of the conveyance system alternatives. A reasonable range of alternatives would discuss some of these same resource management practices without the construction of the conveyances. This is particularly true where one of the co-equal goals of the project is ecosystem restoration. The California Supreme Court has previously invalidated an EIR for failing to consider an alternative that would avoid or reduce harm to an endangered species. (Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, 40 Cal.4th 412, 449 (2007), "Especially given the sensitivity and listed status of the resident salmon species, the County's failure to address loss of Cosumnes River stream flows in the Draft EIR 'deprived the public ... of meaningful participation' [citation] in the CEQA discussion. (See CEQA Guidelines, Cal. Code Regs., tit. 14, [Section] 15065, subd. (a)(1)[potential substantial impact on endangered, rare or threatened species is per se significant].)") Toward this end, the EIR/EIS should have considered an alternative which replaces the fifty-year old fish screens on the existing SWP and CVP pumping facilities with modern fish screens in order to reduce fish mortality. As currently written, the alternatives propose replacing and adding modern screens only in conjunction with construction of the massive new conveyances.</p>	<p>See responses to comments 1722-20 and 1722-21 for a discussion of the range of alternatives evaluated in the EIR/EIS and the RDEIR/RSEIS. The proposed project was developed to meet the rigorous standards of the federal and state Endangered Species Acts; as such it is intended to be environmentally beneficial, not detrimental. By establishing a point of water diversion in the north Delta and new operating criteria the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility.</p> <p>DWR and Reclamation are required to improve fish collection efficiency at the existing south Delta salvage facilities, as part of facility improvements required by the National Marine Fisheries Service 2009 biological opinion on the SWP/CVP. For example, in 2014 Reclamation replaced the secondary louver system with a traveling screen system. These screens provide protection by guiding fish into the holding tanks while catching debris on pegs and transporting debris to a collection system at the work surface.</p> <p>The technology required at the proposed north Delta intakes and the existing south Delta export facilities differ fundamentally. The north Delta intakes would be located on the side of the river channel and so would be designed to comply with CDFW, NMFS, and USFWS fish screening criteria (Appendix 5B Section 3.B.3.3). The south Delta export facilities are located on dead-end channels and require active collection and salvage of fishes.</p> <p>Screening the intakes at Clifton Court Forebay was analyzed during the water conveyance alternative development process and is described in the draft EIR/EIS, Appendix 3A. This alternative was eliminated from further evaluation because initial results of recent studies, including information included in the recent NMFS biological opinions, supported a phased approach that would emphasize improvements to operations of fish handling facilities and reduced predator potential within Clifton Court Forebay prior to further analysis of installation of fish screens. Nevertheless, DWR and Reclamation will continue investigating strategies to increase fish salvage efficiency, reduce pre-screen losses, and improve screening efficiencies,</p>

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			consistent with the 2009 biological opinion of the SWP/CVP.
1722	23	<p>Improvements to existing levees should have been considered in a non-BDCP tunnel/canal alternative. One of the stated reasons for the project is the need to ensure water reliability in the event of a seismic event causing catastrophic failures of the aging levees in the Bay Delta. However, the EIR/EIS failed to consider seismic upgrades to existing levees without also requiring construction of the tunnels and canals proposed in every alternative. In fact, the Economic Sustainability Plan for the Sacramento-San Joaquin Delta ("Sustainability Plan") [Footnote 6: The final Sustainability Plan can be accessed online at this link: http://www.delta.ca.gov/res/docs/ESP/ESP_Final.pdf (last accessed July 20, 2014).], developed by Delta Protection Commission pursuant to Public Resources Code section 29759 and adopted on October 25, 2011, states that levee upgrades not only further the co-equal goals of the Delta Plan Act of 2009, but that they are economically preferable to construction of new conveyance systems. In discussion the justification for levee upgrades, the Sustainability Plan states:</p> <p>"The primary economic justification for this additional upgrade is that it is a cost-effective and more financially feasible alternative to other proposals that address the coequal goals of water supply reliability and ecosystem restoration. A robust, seismically-resistant levee system would make a large improvement to water supply reliability. According to this study, \$1-2 billion would be sufficient to achieve this higher standard with costs potentially increasing to \$4 billion to allow for program management costs and ecosystem enhancement. This is much less expensive than the \$12 billion cost estimate of isolated or dual conveyance, although dual conveyance would result in somewhat higher water exports. ... Not only are upgraded levees less costly, but they provide a much broader set of benefits."</p> <p>(Sustainability Plan, October 10, 2011, p. 90.)</p>	<p>The Delta is not subject to the same degree of overall seismic risk (i.e., threat of ground shaking and surface fault rupture) as much of the Bay area. However, although there is little threat of surface rupture in the Delta, the hazard of seismic ground shaking is moderate to high, based on expected seismic shaking modeling results conducted by the U.S. Geological Survey and DWR. See Section 3E.2.4.2 Ground Acceleration (Ground Shaking) of Appendix 3E and Section 9.1.1.4.2 Earthquake Ground Shaking in Chapter 9 of the 2013 Public Draft BDCP EIR/EIS.</p> <p>A moderate to strong earthquake could cause simultaneous levee failures on several Delta islands which would result in island flooding with resultant island flooding. In 2002, the Working Group on California Earthquake Probabilities estimated that an earthquake of magnitude 6.7 or greater has a 62 percent probability of occurring in the San Francisco Bay Area before 2032, and could cause 20 or more islands to flood at the same time.</p> <p>The proposed project does not purport to protect existing levees from seismic ground shaking. Although the proposed project is not intended to provide enhanced flood protection, it does intend to reduce the vulnerability of the water delivery system by making it less reliant upon the Delta levee system (and associated risks thereto). Further, the proposed project does not envision a change in the state's flood protection policies or programs. For more information on levee stability and seismic risk please see Master Response 16 concerning Delta seismic activity</p> <p>While flood management is not a project purpose of the proposed project, it recognized that levee maintenance and safety in the Delta is an important issue for the residents of the Delta and for statewide interests. The California Department of Water Resources' Levee Repairs and Floodplain Management Office is responsible for administering levee programs through evaluation and direct rehabilitation of structural deficiencies in California's levee system. Overall levee repairs and improvement programs administered by DWR will continue with available funding. For additional information on the relationship between the proposed project and Flood protections in the Delta, please see EIR/EIS Appendix 6A BDCP/California WaterFix Coordination with Flood Management Requirements.</p>
1722	24	<p>A reasonable range of alternatives should have considered several alternatives, or at least one alternative, that did not include construction of tunnels or canals but that incorporated improvements to existing levees, modernization of existing fish screens, and inclusion of all non-tunnel/canal conservation measures discussed in connection with the project. The range of alternatives should have also included an analysis of the only legally feasible project: one which does not "rebalance" or otherwise reprioritize long-held water rights.</p> <p>The lead agency has the flexibility to approve an alternative to the proposed project if that alternative better addresses the agency's environmental concerns. (Sierra Club v. City of Orange, 163 Cal.App. 4th 523, 533 [2008].) An EIR's failure to analyze an adequate range of alternatives deprives the lead agency of the ability to provide this sort of meaningful review and selection.</p> <p>Recirculation of a new Draft EIR/EIS will be required by CEQA Guidelines section 15088.5 because the current EIR/EIS has not considered alternatives that have not been previously analyzed but must be analyzed as part of a reasonable range of alternatives.</p>	<p>See responses to comments 1722-20 and 1722-21 for additional discussion of the adequacy of the alternatives analysis.</p> <p>The proposed project relies upon obtaining authorization from the State Water Resources Control Board (State Water Board) for changing SWP points of diversion in the north Delta. The changes being sought do not include any changes to increase existing water rights or seek out new water rights. Please see Master Response 26 for more information on water rights and the proposed project.</p> <p>For more information regarding purpose and need please see Master Response 3.</p>
1722	25	<p>The Alternatives are inadequate under NEPA.</p> <p>The BDCP EIR/EIS alternatives analysis fails to comply with NEPA because it presents only a limited range of similarly massive project alternatives and fails to even consider a more</p>	<p>See responses to comments 1722-20 and 1722-21 for additional discussion of the adequacy of the alternatives analysis. In addition, please note that all comments received during the 2013 and 2015 public comment period are included in the Final EIR/EIS. Please refer to the table of commenters to locate the</p>

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		<p>moderate and realistic approach to achieving the project's stated goals.</p> <p>An EIS must rigorously explore and objectively evaluate all reasonable alternatives to a project and devote substantial treatment to each alternative in detail so that reviewers may evaluate their comparative merits. (40 C.F.R. Part 1502.14.) The comparison of the project alternatives must be based on the discussion of the significance of each alternative's direct and indirect impacts and any conflicts with corresponding jurisdictional controls. (40 C.F.R. Part 1502.16[c].)</p> <p>The analysis of project alternatives is the "heart of the environmental impact statement." (40 C.F.R. Part 1502.14.) An EIS must consider every reasonable alternative and is rendered inadequate by the existence of a viable but unexamined alternative. (Resources Ltd. v. Robertson, 35 F.3d 1300, 1307 [9th Cir. 1993].) An EIS must look to the core goals of the project to define reasonable alternatives and cannot exclude reasonable simply because an applicant desires a project to have certain features. (Sierra Club v. Marsh, 714 F. Supp. 539, 577-78 [D. Me. 1989].)</p> <p>In determining the scope of alternatives to be considered, the emphasis must be on what is reasonable rather than on what the project proponent prefers. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint, and must not be limited to what is simply desirable from the standpoint of the project proponent.</p> <p>As described above, the alternatives presented in the EIR/EIS present the lead agencies with no real meaningful assessment of what are truly alternatives to the project. Each alternative proposes similarly large-scale infrastructure development, even though a significantly reduced scale project may well have a better ability to achieve project objectives. Because one of the coequal goals of the project is ecosystem restoration, the EIR/EIS should have considered a reduced-scale project, which might lessen the proposed project's adverse impacts. (See, e.g., the numerous comment letters submitted by other stakeholders who have thoroughly examined the impacts to fisheries and endangered species. [Footnote 7: These letters include, but are not limited to, the California Advisory Committee on Salmon and Steelhead Trout letter dated February 26, 2014; the Cardno ENTRIX study included as an attachment to the letter from the American River Water Agencies submitted July 21, 2014; the letters from Friends of the River (with attachments) dated January 14, 2014, March 6, 2014; and the comments on the species-related impacts in the letter from the Environmental Water Caucus dated June 11, 2014. Friant appreciates the effort these organizations have made to undertake technical studies necessary for a meaningful review.])</p> <p>Western Watersheds Project v. Abbey, 719 F.3d 1035, (9th Cir June 7, 2013), amended sub nomine Mont. Wilderness Ass'n v. Connell, 725 F.3d 988, (9th Cir. Mont. 2013), concerned a challenge to a resource management plan for a national monument, the programmatic EIS for that plan, and an Environmental Assessment (EA) for a renewal of a permit to graze cattle on a portion of the monument. In its analysis, the court had analyzed the EIS and found it to be sufficient for its program-level analysis. However, the court found that the EA for the grazing permit did not comply with NEPA because it did not take a hard and careful look at a reduced- or no-grazing alternative, and modification of grazing practices had also not been considered at a programmatic level for the full area in question. The court ultimately ordered the U.S. Bureau of Land Management (BLM) to either prepare an EIS or remedy the alternatives deficiencies in the EA. Under NEPA, an alternatives analysis in an</p>	<p>letter of interest.</p>

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		<p>EIS must necessarily be more rigorous than under an EA. Accordingly, the BDCP EIR/EIS must analyze a reduced project alternative (one that does not involve the years-long construction of conveyance infrastructure) in order to comply with NEPA.</p> <p>In addition to failing to explore all reasonable alternatives, the alternatives that are considered suffer from the same flaws as the project description: the alternatives are vague and legally infeasible in light of the constraints imposed by the existing water rights. Where, as here, the information in the initial EIS is incomplete or misleading such that the decision maker and the public could not make an informed comparison of the alternatives, revision of the EIS is necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA. (National Resources Defense Council v. United States Forest Serv., 421 F.3d 797, 811 [9th Cir. Alaska 2005].)</p>	
1722	26	<p>Erroneous Climate Change Assumptions Create an Illusory No Project/No Action Scenario.</p> <p>Further problems with BDCP’s alternatives analysis under both CEQA and NEPA are revealed by independent verification of the underlying BDCP model. As described briefly above and in great detail in the independent Modeling Review (see ATT 1), there is a technical – but very material -- error present in all of BDCP’s modeling scenarios which consider climate change analysis in the early long term or late long term conditions. This error in baseline and future modeling can have a pervasive effect, skewing the EIR/EIS analysis of future operations and related impacts. The result is that the no action alternative, when projected into the future using the BDCP model, is incorrect. The effect of the error is that the future no action scenario looks far more dire than it would realistically be. This, in turn skews the analysis of the proposed project when compared to the no action alternative, and precludes meaningful analysis and comparison of the project impacts. Friant Water Authority respectfully requests that the numerous errors in the BDCP model be corrected, and the model be re-run using the updated 2013 CalSim II model. The EIR/EIS should be revised to incorporate this updated analysis, and recirculated to provide the public an opportunity to better understand the complex but crucial modeling which supports the impact analyses.</p>	<p>EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK’s independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK’s independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK’s modeling of the No Action Alternative and Alternative 4 result in different results from the EIR/EIS. In a planning study such as the BDCP, the models are generally frozen in time to allow consistency and comparability in the effects analysis. For a planning study, the implementation used in the BDCP modeling provides a fair representation of the proposed operations criteria under the Alternatives, and is consistent across all the Alternatives.</p> <p>The climate change assumptions were consistent across all the alternatives including the No Action Alternative. As shown in the EIR/EIS, San Joaquin River operations remain unchanged under the action Alternatives compared to the No Action Alternatives. The error in the Millerton climate-modified inflow was found to only affect Millerton storage and flows in the San Joaquin River, and it had only minor impacts to the Delta and Sacramento River operations.</p> <p>EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010, and includes same assumptions of the projected climate change and sea level rise effects at 2060. The modeling shows that changes in climate and sea level could result in “dead pool” conditions in SWP and CVP reservoirs upstream of the Delta even without action alternatives. The “dead pool” conditions presented in the CALSIM II model results in the EIR/EIS are based on modeled SWP and CVP water operations under current regulations and future demand assumptions. In addition, CALSIM II cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes operating criteria per the current regulations for all dry periods, and does not reflect specific relaxations that could occur in drought conditions. As described in Chapter 5, Water Supply, the BDCP EIR/EIS analyses assume continued implementation of regulatory requirements in accordance with the requirements under the CEQA definition of Existing Conditions and under the NEPA definition of the No Action Alternative. Changes in the regulatory requirements would only occur following detailed analyses, including project-specific CEQA and NEPA analyses and ESA and CESA analyses. Following adoption of changes to the regulatory requirements by the State and federal governments, DWR and Reclamation would need to determine if changes in the SWP and CVP would be necessary. These changes are considered to be speculative and are not included in the No Action Alternative or in the Cumulative Impact Analysis.</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS</p>

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			<p>please see Appendix 5F of the FEIR/EIS and Master Response 30. See also Master Response 19 for additional information on the climate change analysis. For additional information regarding impacts to upstream reservoirs, please see Master Response 25.</p>
1722	27	<p>The Baseline is inadequate.</p> <p>The BDCP neglects to identify a definitive baseline against which the public can adequately assess potential environmental impacts.</p> <p>Pursuant to CEQA Guideline section 15125, subdivision (a), an EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the Notice of Preparation is published or, if no notice is published, at the time environmental analysis is commenced. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. (CEQA Guidelines, [Section] 15125(a).) Similarly, under NEPA, the project's impacts are measured against the no action alternative. Here, the required description of a baseline is missing and where referenced suffers from the same problem of vagueness--to the point of being misleading--as the missing project description. The EIR must describe the physical environmental conditions in the vicinity of the project. In this case, although the EIR purports to conduct project-level analysis, the baseline discussion is so sparsely described and so woefully inadequate that is difficult and in some cases impossible to determine where is the "vicinity," much less understand its physical conditions and how the proposed project might change them.</p>	<p>See Master Response 1 for discussion of why the baselines used in the EIR/EIS are appropriate under CEQA and NEPA.</p>
1722	28	<p>The BDCP relied on the outdated 2010 model which incorporated numerous errors and assumptions that do not represent the actual existing conditions. For example, the baseline used to analyze water quality is erroneous and misleading because it relies on a flawed model. As described in more detail the independent Modeling Review (see ATT 1) commissioned by Friant Water Authority and other stakeholders, the BDCP model contains significant errors that affect both the baseline water quality and the subsequent analysis. First, the BDCP model contains an artificial constraint that prevents the North Delta diversion facilities from taking water as described in the BDCP project description. Second, the model does not reflect the summer season operations of the South Delta diversions that are described in the EIR/EIS as a feature of the BDCP project intended to prevent water quality degradation in the south Delta. In other words, the BDCP's analysis does not match up with the project as described in the documents. The net effect of these two errors is that the BDCP model significantly underestimates the amount of water diverted from the North Delta diversion facilities and overestimates the amount of water diverted from the South Delta diversions, completely skewing any resulting analysis of the water quality -- the very feature that the latter diversions are intended to protect. The model should be corrected and re-run in order to provide the public with an accurate assessment of the BDCP's anticipated effect on existing conditions. Additionally, the outdated model used in the BDCP fails to include parameters that capture existing regulatory requirements, which ultimately affects the impacts analysis. For example, in baseline and future "no project" scenarios, the 2010 model does not incorporate habitat restoration requirements set forth in the 2008 FWS Biological Opinion ("BO") and the 2009 National Marine Fisheries Service ("NMFS") BO -- even though these requirements are in effect whether or not the project proceeds. However, the BDCP model only incorporates these habitat restoration requirements when analyzing the future "with project" scenarios. (Modeling Review, p. 14.) Instead, the future "with project" scenario should have been compared with a baseline that incorporates the BOs in order to accurately assess how much habitat restoration would be attributed to the</p>	<p>EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – October north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the FEIR/EIS. Specifically, MBK's modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to EIR/EIS modeling.</p> <p>Further, as noted in the Tables 5-7 through 5-9 of the 2013 Public Draft EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under all alternatives as a result of these export changes are analyzed in Chapter 8 of the EIR/EIS.</p> <p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p> <p>For more information regarding water quality please refer to Chapter 8 of the FEIR/EIS and Master Response 14. For discussion of baseline please see Master Response 1. The proposed project aims to stabilize water supplies, and exports could only increase under certain circumstances. Water deliveries from the federal and state water projects under a fully-implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the</p>

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		project, versus how much is actually part of the baseline pre-project conditions.	<p>overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline. As described in Section 3.5.1 of Chapter 3, Description of Alternatives, in the Draft BDCP EIR/EIS, the habitat restoration under the 2008 USFWS biological opinion and the 2009 USFWS biological opinion are included in the No Action Alternative in a qualitative manner.</p> <p>The originally proposed habitat restoration measures and related Conservation Measures (CMs) (i.e., CM2 through CM21) would not be included as part of the Proposed Action, except to the extent required to mitigate significant environmental effects under CEQA and meet the regulatory standards of ESA Section 7 and California Endangered Species Act (CESA) Section 2081(b). However, restoration actions that are independent of Proposed Action will continue to be pursued as part of existing projects and programs. Examples of these include the 2008 and 2009 USFWS and NMFS BiOps (e.g., Yolo Bypass improvements and habitat enhancements, 8,000 acres of tidal habitat restoration), (2) California EcoRestore, and (3) the 2014 California Water Action Plan.</p>
1722	29	<p>The independent Modeling Review (see ATT 1) of the baseline reveals further inaccuracies simply because the BDCP model uses the outdated and incorrect 2010 model. For example, Reviewers found errors in the BDCP's modeling of its no action alternative "early long term" scenario, further calling into question the baseline. The BDCP's flawed model estimates that, under the early long term no action alternative, the total average annual exports for CVP and SWP combined are estimated to be 4.73 million acre feet ("MAF"). However, in the independent modeling undertaken with the updated 2013 CalSim II model and corrected assumptions, the combined exports for the future no action alternative are 5.61 MAF. When these numbers are compared against the tunnel construction project component (Alternative 4), the BDCP will lead to a projected average annual increase in exports of approximately 540 thousand acre feet ("TAF"), whereas the independent model projects an increase of approximately 750 TAF. (Modeling Review, p. 27). Aside from the substantive implications of such conflicting results ostensibly from the same BDCP, the discrepancy in these basic numbers calls into question the soundness of the BDCP model and the existing and future conditions it purports to represent. The absence of any meaningful baseline analysis renders the EIR/EIS defective.</p>	<p>EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the EIR/EIS.</p> <p>As noted in the Tables 5-7 through 5-9 of the draft EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the long-term average Delta exports under Alternative 4 remain similar or increase compared to the No Action Alternative. With respect to the reference to the impact designation in the draft EIR/EIS for WS-2, it was determined that no impact designations would be developed for Water Supply changes because the true impacts occur under other environmental resources. For example, increased surface water deliveries under Water Supply is assumed to result in less groundwater pumping and less effects on groundwater conditions.</p> <p>Please see response to comment 1722-5 regarding the new preferred alternative. For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p>
1722	30	<p>Mitigation is improperly deferred.</p> <p>The EIR/EIS violates CEQA by deferring mitigation until future studies have been undertaken. (14 Cal Code Regs [Section] 15126.4(a)(1)(B).) "Impermissible deferral of mitigation measures occurs when an EIR puts off analysis or orders a report without either setting standards or demonstrating how the impact can be mitigated in the manner described in the EIR." (City of Long Beach v Los Angeles Unified Sch. Dist., 176 Cal.App.4th 889, 915 (2009).)</p> <p>The EIR/EIS largely substitutes promises of future environmental studies and mitigation programs for the identification and consideration of project impacts for public review and comment. Given that the Plan's conservation measures purport to function as mitigation for the tunnels, the EIR/EIS provides only an improper program-level review of mitigation for the tunnels, effectively deferring analysis of mitigation until a future EIR/EIS. Conservation measures 2 through 22 are key components of the BDCP, and they are purely ecosystem</p>	<p>For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p> <p>For more information regarding project and program level analysis please see Master Response 2. Please see also Master Response 22 for a discussion of standards governing the adequacy of mitigation measures.</p>

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		restoration efforts that serve to mitigate the destructive impacts of the gigantic tunnel construction. However, because those measures are only reviewed at the program level, it is impossible to assess whether they are even feasible. An environmental document cannot defer the analysis of one of its elements to a pending environmental document that will be completed in the future. (Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova, 40 Cal.4th 412, 440-441 [2007].) Because the tunnel construction is reviewed at the project level, the key project elements which mitigate the tunnels' impacts should likewise be reviewed at the project level. Under a program analysis, they are deferred mitigation which may or may not ever be implemented.	
1722	31	The EIR/EIS improperly defers mitigation of potential water quality impacts. For example, mitigation measure WQ-11a (p. 8-427) proposes to conduct additional evaluation and modeling of increased salinity levels only after the isolated tunnels are constructed and operating. This is particularly worrisome in light of the fact that the BDCP model is already replete with errors and incorrect assumptions, as discussed in the Modeling Review (see ATT 1).	For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30. Please see Master Response 14 for a discussion of water quality, including the modeling approach used in the RDEIR/SDEIS and Final EIR/EIS. For more information regarding project and program level analysis please see Master Response 2. Please see also Master Response 22 for a discussion of standards governing the adequacy of mitigation measures.
1722	32	Appendix 3B of the EIR/EIS contains a list and summary of the "environmental commitments" that the project purports to incorporate, stating that "DWR will also include these commitments in the Mitigation Monitoring and Reporting Plan for the BDCP to ensure implementation of the commitments during project construction and operation." (EIR/EIS, p. 3B-1). However, many of the commitments referenced are actually additional plans which have yet to be developed. For example, the "performance measures" to be implemented in connection with barge operations will developed based on future biological monitoring reports. (EIR/EIS, p. 3B-21). Yet barge activity required for the construction, with its associated impacts to biological resources, should be assessed now, not at some future time.	Please see Master Response 22 for a discussion of environmental commitments and the adequacy of recommended mitigation measures.
1722	33	An EIR cannot defer analysis of impacts to biological resources by proposing a plan to mitigate potential impacts based on future studies, unless the mitigation measures and mitigation performance standards are actually identified. (San Joaquin Raptor Rescue Ctr. v County of Merced, 149 Cal. App.4th 645, 671 (2007) [mitigation measure required preparation of land management plan for burrowing owl preserve; EIR set forth no criteria or standards of performance for achieving this measure and thus improperly deferred the mitigation].) The environmental commitments in the EIR/EIS do not rise to the level of the specific performance criteria required to justify deferring mitigation to a later date. (POET, LLC v. State Air Resources Bd., 218 Cal. App. 4th 681, 738, (2013), emphasis in original [in promulgating its low carbon fuel standard regulations, CARB's generalized goal that it would commit to future rulemaking to ensure that there was no increase in NOx was insufficient to ensure future mitigation of potential NOx impacts].) The EIR/EIS's environmental commitments are not specific performance standards and therefore cannot substitute for actual and enforceable mitigation measures because they "leave[] the reader in the dark about what land management steps will be taken, or what specific criteria or performance standard will be met, ..." and impede a full discussion about the project impacts and potential mitigation. (San Joaquin Raptor Rescue Ctr. v County of Merced, supra, 149 Cal. App.4th at 670.)	Please see also Master Response 22 for a discussion of standards governing the adequacy of mitigation measures. The commenter has cited two CEQA precedents in which the reviewing courts found problems with particular mitigation language that the respondent agencies had claimed included performance standards. Other CEQA precedents have found adequate performance standards where the language at issue was less concrete and specific than the language at issue in the POET and San Joaquin Raptor cases. (See, e.g., Rialto Citizens for Responsible Growth v. City of Rialto (2012) 208 Cal.App.4th 899, 945-946 [mitigation was sufficient in requiring the project proponent to comply with compensation ratios to be determined later by the US Fish and Wildlife Service]; Save Cuyama Valley v. County of Santa Barbara (2013) 213 Cal.App.4th 1059, 1070-1071 [mitigation was sufficient in requiring avoidance of "adverse hydraulic conditions"]; and North Coast Rivers Alliance v. Marin Municipal Water District Board of Directors (2013) 216 Cal.App.4th 614, 630 [mitigation was sufficient in requiring that a mandated landscape plan must "soften the visual intrusion" associated with new water tanks].)
1722	34	Inaccurate economic information can defeat the purpose of an environmental impact statement by "impairing the agency's consideration of the adverse environmental effects and by skewing the public's evaluation of the proposed agency action. (See National	Please see the BDCP Statewide Economic Impact Report (http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Draft_BDCP_Statewide_Economic_Impact_Report_8-5-13.sflb.ashx), which indicates that the BDCP would result in a substantial net

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		<p>Resources Defense Council v. United States Forest Serv., 421 F.3d 797, 811 (9th Cir. Alaska 2005) [EIS failed to comply with NEPA by misstating market demand statistics in comparing alternatives for lumber project]; see also Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446-48 (4th Cir. 1996) [EIS failed to comply with NEPA by inflating the economic benefits of the proposed action].) Where the information in the initial EIS is incomplete or misleading such that the decision maker and the public could not make an informed comparison of the alternatives, revision of the EIS is necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA. (National Resources Defense Council v. United States Forest Serv., supra, 421 F.3d at 811.) DWR and Reclamation need to address the critical issues surrounding the BDCP's costs and how the project proponents actually propose for them to be met, and then revise the EIR/EIS accordingly in order to provide the public an opportunity for meaningful review and comment.</p>	<p>economic benefit to the State of California.</p> <p>The analysis in the BDCP Statewide Economic Impact Report did use 60 years as the time horizon in which to calculate the economic benefits of the operation of the water conveyance facility for water supply, water quality, and water supply reliability. For this analysis, the costs of operating the facility were also calculated out to 60 years. The costs of implementing BDCP conservation measures 2 to 21 would have ended after 50 years, corresponding to the end of the permit term. While costs to manage the BDCP Reserve System continue in perpetuity, these costs would be paid for by the endowment created during the first 50 years. So there would be no new costs after 50 years except the continued operation of the water conveyance facility. Therefore, it was reasonable to consider the costs and benefits of the water conveyance facility beyond 50 years because its useful life would extend beyond 50 years and with benefits accrued throughout its life. Indeed, because the facility would be likely to last much longer than 60 years, considering benefits out to 60 years was very conservative and greatly underestimated these economic benefits.</p> <p>The proposed water conveyance facility design was approximately 10% complete under the 2013 Public Draft. This level of design is typical of infrastructure projects at this stage of the environmental review process. The detailed cost estimate for the facility was developed to take into account the preliminary level of design. Cost estimates include standard contingencies of 20-30% and in some cases are as high as 50% where cost uncertainties are highest. The cost estimate in Chapter 8 of the 2013 Public Draft, is at an appropriate level of detail and accuracy for a planning level estimate for the endangered species permits from the state and federal governments.</p>
1722	35	<p>The document's error in failing to establish the actual environmental setting for the project is compounded by failing to provide standards for mitigation or, in some cases, by identifying mitigation measures without knowledge of the actual conditions to be mitigated. The information presented is insufficient to permit an evaluation of potential impacts of the project or measures to mitigate such impacts. By deferring study of these issues, the public is denied the opportunity to provide informed comments, and decision makers are denied the information necessary to arrive at a reasoned choice among alternatives -- deficient as they are -- supported by a factual record.</p>	<p>For more information regarding environmental baselines please see Master Response 1. Please see also Master Response 22 for a discussion of standards governing the adequacy of mitigation measures.</p>
1722	36	<p>Water Supply and Reliability is Inaccurate and Misleading.</p> <p>The BDCP Increases the Likelihood of Water Shortages to Certain Contractors.</p> <p>The project consists of a delivery and diversion system and some associated habitat restoration features. As such, the project will not increase water supplies, though it has the potential to increase the amount of water that can be captured, depending on how the SWP and CVP are operated under the future with-project conditions. Unfortunately, as noted above, the BDCP documents are wholly devoid of operational plans and the description of future operations is so vague that it cannot be used to assess meaningfully the likely impacts of the project. Moreover, with respect to water supply reliability, the faulty BDCP model results in skewed and inaccurate analyses.</p>	<p>For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30. For more information regarding 4A operational components please see Chapter 3 of the FEIR/EIS. Please see also responses to comments 1722-6, 1722-7 and 1722-9.</p> <p>The proposed project aims to stabilize water supplies, and exports could only increase under certain circumstances. Water deliveries from the federal and state water projects under a fully-implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline.</p>
1722	37	<p>As shown by the Modeling Review (see ATT 1), the BDCP contains questionable operational assumptions that lead to unrealistic results in the water supply analysis. For example, the model uses "artificial criteria" -- meant to simulate expert human judgment rather than depict actual regulatory or operational constraints -- in selecting a target storage level for the San Luis Reservoir ("SLR"). (Modeling Review, p. 16.) In modeling the Alternative 4 project, this artificial target for the reservoir level sets storage to "dead pool" in the late fall and early winter. This artificially frequent "dead pool" level target -- which has never been attained with this frequency in real life operations -- creates annual shortages to south of</p>	<p>The "dead pool" conditions presented in the CALSIM II model results in the EIR/EIS are developed from calculated monthly average reservoir volumes. Because the model only calculates and reports SWP and CVP water operations at an average monthly basis, the model cannot simulate changes that occur on a weekly basis by water users and SWP and CVP operations. In addition, the model cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes average operating criteria for all dry periods, and does not reflect specific changes. The dead pool conditions occur in the No Action Alternative as compared to the Existing Conditions because the model includes changes in precipitation without making changes in water diversion patterns. The EIR/EIS analysis</p>

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		Delta water users under the BDCP model and thus presents an inaccurate portrayal of water supply impacts.	<p>considers changes between the frequency of dead pool conditions under the alternatives and the No Action Alternative (both with the same climate change assumptions) to determine if the changes are adverse or beneficial.</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p> <p>Please also note that all comments received during the 2013 and 2015 public comment period are included in the FEIR/EIS. Please refer to the table of commenters to locate the letter of interest.</p> <p>With regards to upstream reservoir effects, please see Master Response 25.</p>
1722	38	The modeling on which the EIR/EIS shows that the BDCP would adversely impact water supply reliability as to Friant Water Authority. Under the new diversions proposed by the BDCP, there is the strong likelihood that during dry years, the CVP would be unable to deliver its full contract amount. This, in turn, would increase the likelihood that Reclamation would be unable to fulfill its commitment to those to whom it owes a "vested priority obligation," such as the "Exchange Contractors." Under ordinary pre-project conditions, Reclamation would provide the Exchange Contractors with a substitute supply of water, and Friant would be entitled to water from the San Joaquin River. The BDCP's proposed operations thereby decrease the reliability of Friant's water supply as compared to current conditions. (Friant Issues Analysis, pp. 10-11.) This means that the BDCP project will cause a water supply impact to Friant Division contractors. The BDCP has failed to analyze or mitigate for this hydrological impact. This result is unacceptable to Friant.	<p>The EIR/EIS provides a comparison of conditions the action alternatives and the Existing Conditions and the No Action Alternative under long-term operations. It is recognized that different SWP and CVP operations would occur during emergency situations, including flood and drought conditions. Although those emergency operational conditions, such as recently occurred when flows from Millerton Lake were provided to the San Joaquin River Exchange Contractors, are not specifically modeled, the change in frequency of the types of conditions which would lead to emergency operations are indicated by the CALSIM II model results in Appendix 5A, Section C, Modeling Results, in the EIR/EIS.</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30. See also response to comments 1722-36 and 1722-37.</p>
1722	39	The project's impact on Friant Water Authority's existing water users is illegal. California Water Code section 1702 provides, in pertinent part, "Before permission to make [a change in the point of diversion] is granted the petitioner shall establish, to the satisfaction of the board, and it shall find, that the change will not operate to the injury of any legal user of the water involved." (See also Cal. Water Code [Sections] 1701.2(d), 1701.3(b)(1).) Friant has continuously expressed its concern regarding these impacts, and our review of this portion of the EIR/EIS only reinforces our views that the BDCP should be substantially revised to present a project that does not assume changes to operations that would violate water rights and injure existing legal users of water.	<p>See response to comment 1722-1 for a discussion of water rights and delta exports associated with proposed project implementation. DWR and the Bureau have filed for a change in point of diversion with SWRCB for the proposed project. The SWRCB has the responsibility to determine that legal water users are protected from injury.</p> <p>For more information regarding changes in Delta exports please see Master Response 26 and for water rights see Master Response 32.</p>
1722	40	Chapter 5, Water Supply, gives short shrift to the governing authority of the water rights implicated in the project's proposed diversions. Increasing water supply reliability is one of the BDCP's two goals, but the project will cause the opposite to occur for Friant Water Authority's water users. Given the numerous errors in the BDCP model, as well as the failure of the BDCP and EIR/EIS to analyze the operational constraints imposed by recognizing existing water rights, priorities, and uses, including Friant's, the BDCP and EIR/EIS should be revised and recirculated.	<p>The CALSIM II model assumptions include no changes to the senior water rights which are described in Appendix 5A of the draft EIR/EIS. The improved water supply reliability is associated with many factors. Under the range of alternatives considered in the draft EIR/EIS full contract amounts are not delivered in the majority of times to the SWP and CVP water contractors. The No Action Alternative and Alternatives 4H1, 4H2, 4H3, 4H4; 5; 6A, 6B, 6C; 7; 8; and 9 would result in less SWP and CVP water deliveries south of the Delta than under Existing Conditions (shown in Tables 5-5 and 5-8). Similarly, Alternatives 6A, 6B, 6C; 7; 8; and 9 would result in less SWP and CVP water deliveries south of the Delta than under the No Action Alternative (shown in Tables 5-6 and 5-9).</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p>
1722	41	<p>Modeling and Data Limitations Highlight the Unreliability of the Plan.</p> <p>The basis for the environmental analysis in the BDCP EIR/EIS is flawed and misleading computer modeling. As Friant Water Authority has stated in the past and noted above, BDCP's modeling demonstrates that the project reduces Friant's water supply reliability as</p>	<p>As noted in the Chapter 5 of the draft EIR/EIS, modeling of Alternatives includes assumptions of the projected climate change and sea level rise effects at 2060. The changes in the reliability of the Friant's water supply is driven by these assumed changes in the climate and not a result of the action alternatives. The modeling shows that changes in climate and sea level could result in lower levels in SWP and CVP reservoirs upstream of the Delta even without BDCP alternatives. The lower reservoir levels presented in the</p>

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		<p>compared to existing conditions. The modeling also shows that BDCP provides no significant water quality improvement to CVP agricultural water users such as Friant. Even worse, the artificial and incorrect analysis presented in the EIR/EIS denies the public and public agencies the information necessary to understand how the project will be developed and to comment on the most critical potential environmental impacts of the project.</p> <p>The independent Modeling Review (see ATT 1) commissioned by Friant and other stakeholders concludes that the BDCP Model, which serves as the basis for the environmental analysis contained in the BDCP EIR/EIS, provides very limited useful information to understand the effects of the BDCP. The BDCP Model contained erroneous assumptions, errors, and outdated tools, which resulted in impractical or unrealistic CVP and SWP operations. The unrealistic operations, in turn, do not accurately depict the potentially real effects of the BDCP.</p>	<p>CALSIM II model results in the EIR/EIS are based on modeled SWP and CVP water operations under current regulations and future demand assumptions. In addition, CALSIM II cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes operating criteria per the current regulations for all dry periods, and does not reflect specific relaxations that could occur in drought conditions. As described in Chapter 5, Water Supply, the draft EIR/EIS analyses assume continued implementation of regulatory requirements in accordance with the requirements under the CEQA definition of Existing Conditions and under the NEPA definition of the No Action Alternative. Changes in the regulatory requirements would only occur following detailed analyses, including project-specific CEQA and NEPA analyses and ESA and CESA analyses. Following adoption of changes to the regulatory requirements by the State and federal governments, DWR and Reclamation would need to determine if changes in the SWP and CVP would be necessary. These changes are considered to be speculative and are not included in the No Action Alternative or in the Cumulative Impact Analysis.</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30. See also response to comments 1722-36 and 1722-37.</p> <p>Please also note that all comments received during the 2013 and 2015 public comment period are included in the FEIR/EIS. Please refer to the table of commenters to locate the letter of interest.</p> <p>RDEIR/SDEIS 4.3.4 (4A) and Final EIR/EIS Chapter 8, Section 8.3.4, describes whether concentrations of various water quality constituents are expected to increase or decrease with the project, relative to existing conditions and the No Action Alternative. To the extent that concentrations of various water quality constituents are expected to increase, it is described whether these increases are expected to result in impacts to beneficial uses of water in the Delta. For constituents for which adverse impacts were expected, mitigation and other commitments, such as additional evaluation and modeling and consultation with water purveyors to identify additional measures to avoid and minimize or offset these impacts, were introduced to address those impacts. Please see also Master Response 14 for more information on water quality.</p> <p>Additionally, adding intakes in the North Delta will allow for operational flexibility that can improve natural flow in the Delta and avoid impacts to migratory fish based on real time data and operations.</p>
1722	42	<p>The BDCP Cannot Meet Its Project Objective of Fulfilling Water Contracts.</p> <p>There is insufficient water available to meet the BDCP's stated objectives of fulfilling water contracts and providing the volume of water for aquatic species that the lead agencies are advocating. Simply assuming a level of transfers that has never previously been attained, or performing an illegal rebalancing of water rights priorities, will not rectify this flaw: there just is not enough water to meet all of these demands.</p> <p>The EIR "must assume that all phases of the project will eventually be built and will need water, and must analyze, to the extent reasonably possible, the impacts of providing water to the entire proposed project." (Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova, 40 Cal.4th 412, 431 (2007).) Also, "the future water supplies identified and analyzed must bear a likelihood of actually proving available; speculative sources and unrealistic allocations ('paper water') are insufficient bases for decision-making under CEQA." (Id. at 432.)</p>	<p>See responses to comments 1722-36 through 1722-41.</p>
1722	43	<p>The BDCP Conflicts with Applicable Water Rights Law.</p> <p>As discussed in Section II of this letter (Water Rights), an integral component of this project is the stated ability to adjust water flows that are part of the CVP which, in turn, affects</p>	<p>See response to comment 1722-1 for a discussion of water rights and Delta exports associated with proposed project implementation.</p>

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		water rights and priorities. The EIR/EIS fails to recognize this conflict with jurisdictional controls, and is therefore inadequate in this regard. This defect in the EIR/EIS cannot be cured without revising that component of the BDCP which involves these water rights.	
1722	44	<p>The Plan's Significant Adverse Biological Impacts Undermine Project Objectives.</p> <p>Under NEPA, an EIS must fulfill and satisfy to the fullest extent possible the discussion of the significant environmental impacts of a project. (40 C.F.R. Part 1502.9.) Likewise, under CEQA, a project may have a significant effect on the environment if it will result in "a substantial, or potentially substantial, adverse change in the environment." (Pub. Resources Code [Section] 21068.) The BDCP actually harms biological resources and thus undermines the BDCP's coequal goal of ecosystem restoration. The EIR/EIS fails to recognize this harm, and thus does not analyze it, which precludes meaningful public review of the project. Accordingly, the EIR/EIS should be revised to assess the additional impacts to biological resources that are currently either ignored by the BDCP or obscured by incorrect modeling.</p>	<p>The Proposed Project has been developed with the goals of minimizing and avoiding incidental take of listed species to the maximum extent practicable. Chapter 11, Fish and Aquatic Resources, and Chapter 12, Terrestrial Biological Resources, EIR/EIS, describe effects of the proposed project and several alternatives on fish and wildlife species in the Plan Area. For additional information on impacts to biological resources please see Master Response 17.</p> <p>Discussion of the main environmental attributes affecting individual covered species are provided in Appendix 2.A of the 2013 Public Draft. Effects of the proposed water conveyance and associated restoration activities on general resource areas are discussed in Ch. 4 of the RDEIR/SDEIS. Resource areas are addressed separately under sections for each of the new project Alternatives, including fish and aquatic resources and terrestrial biological resources, and others. Where impacts are determined to be significant, environmental commitments will be implemented to avoid and/or offset these effects, where possible.</p> <p>The Cumulative Impact Analyses that was written for the 2013 Public Draft EIR/EIS has been revised to include the impacts associated with the new proposed project alternatives and also updates past analyses. Environmental Commitments are to minimize effects to the Delta and its inhabitants and mitigate for loss of habitat to the ecosystem and its species. For more information please see Section 5 Revisions to Cumulative Impact Analyses, Appendix A Chapter 11 Fish and Aquatic Resources, Appendix A Chapter 12 Terrestrial Biological Resources, and Appendix 3B Environmental Commitments, AMMs, and CMs of the RDEIR/SDEIS. For additional information regarding cumulative impacts, please see Master Response 9.</p>
1722	45	<p>Agricultural Impacts are Not Addressed.</p> <p>The EIR/EIS does not address the adverse impacts the BDCP will have on farmland. Although it may benefit a select few large growers, it will harm many others. The BDCP Statewide Economic Impact Analysis notes that \$2 million worth of agricultural land will be lost due to an increase in salinity. Given the numerous errors discovered in the BDCP model, including with regards to salinity modeling, the actual impact to farmland from increased salinity may be greater. The BDCP should incorporate a full modeling analysis of potential salinity intrusion to farmland using an updated and corrected 2013 CalSim II model. The EIR/EIS should be revised to include an analysis of the results, and should be recirculated to give members of the public a chance to meaningfully review the implications.</p>	<p>Please see RDEIR/SDEIS Appendix A Chapter 14, Agricultural Resources, Impact AG-1 and Impact AG-2 and their associated mitigation measures for complete analysis of how the proposed project will effect and mediate important farmland in the Delta. With regards to agricultural impact mitigation, please see Master Response 18. Please see response to comment 1722-34 for additional discussion of the BDCP Statewide Economic Impact Report.</p> <p>For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30. See also response to comments 1722-36 and 1722-37.</p> <p>For more information regarding salinity please see Master Response 14 (Water Quality).</p>
1722	46	<p>The BDCP relies on complex hydrological modeling to assess numerous and significant changes to flow amounts, rates and timing. These changes necessarily effect water quality, including temperature, turbidity, and salinity. These water quality changes, in turn, can affect agriculture and fisheries and other aquatic resources, including sensitive endangered species and designated critical habitat. In order to understand the impacts that the BDCP will have on all of these resources, it is critical that the BDCP's foundational modeling be correct.</p> <p>Independent modeling analysis reveals that the errors present in the BDCP model extend to impacts on water quality. Independent modeling with the updated and corrected 2013 CalSim II model shows that Delta outflow would be approximately 200 TAF/yr lower than the quantity indicated in the EIR/EIS. This lower outflow has the potential to significantly and adversely impact water quality and supply as they relate to biological resources and in-Delta beneficial uses. Because these impacts are not revealed by the underlying flawed model, they are not discussed in the EIR/EIS. To determine the potential effects of the</p>	<p>EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the BDCP EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the EIR/EIS.</p> <p>The aggregate effect of the changed assumptions under MBK's modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the EIR/EIS.</p> <p>Further, as noted in the Tables 5-7 through 5-9 of the draft EIR/EIS, depending on the decision tree outcome</p>

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		<p>reduced amount of Delta outflow, additional modeling is needed, which will require revisions to the EIR/EIS. (Modeling Review, p. 27, see ATT 1).</p> <p>The BDCP model also incorrectly models the location of the diversions that the SWP and CVP will make from the Delta. When the locational errors in the BDCP model were corrected in the Modeling Review, it was revealed that the North Delta Diversions could divert approximately 680 TAF/yr more than the amount indicated by the BDCP EIR/EIS. Conversely, the quantity of water diverted through the existing South Delta Diversions would be approximately 460 TAF/yr less than what is projected in the BDCP EIR/EIS. This difference in the location of diversions has the potential to impact water quality in the Central and South Delta. (Modeling Review, p. 6). Like the other impacts revealed by correcting the flawed BDCP, these adverse impacts were not identified by or considered in the EIR/EIS. The BDCP model should be corrected, updated and re-run, and the EIR/EIS should analyze and address these impacts.</p>	<p>of H1 through H4 scenarios, the resulting Delta outflow will be different under Alternative 4 compared to the No Action Alternative. The effects of changes in Delta outflow on water quality, fisheries and other environmental resources under Alternative 4 are analyzed in other resource Chapters of the EIR/EIS.</p> <p>MBK's modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to draft EIR/EIS modeling. As noted in the Tables 5-7 through 5-9 of the draft EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under Alternative 4 as a result of these export changes are analyzed in Chapter 8 of the draft EIR/EIS. Please see also Master Response 14 for additional information on water quality.</p> <p>For more information regarding new subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p>
1722	47	<p>The BDCP's analysis of seismic impacts of the project is flawed because it misleads the public about the adequacy of the existing levee system in order to justify the need for the project, and it fails to assess the potential for failure of the new conveyance system due to a seismic event during construction.</p> <p>The EIR/EIS claims that Delta's levees are fragile and vulnerable to catastrophic seismic failure. However, the levee system held during the massive Loma Prieta earthquake of 1989. As discussed in the Alternatives section of this letter, bringing all Delta levees up to modern seismic standards would cost less than \$4 billion -- far less than the \$25 billion to \$60 billion required for the new conveyance structures. As discussed in more detail under the alternatives section, the EIR/EIS should have considered an alternative that includes improving seismic stability of existing levees without the construction of the conveyances. Because it failed to consider this alternative, the EIR/EIS assessment of seismic impacts is inadequate.</p>	<p>See response to comment 1722-23 for a discussion of levee stability</p> <p>Regarding the part of the comment pertaining to other project alternatives, please refer to Master Response 4 Alternatives. Please see Master Response 16 concerning Delta seismic activity.</p>
1722	48	<p>The BDCP itself is fundamentally flawed in two ways: 1) it violates the federal Endangered Species Act [ESA]/California Endangered Species Act [CESA] by harming listed species, and 2) it lacks the funding required by the HCP (Habitat Conservation Plan) and NCCP (Natural Community Conservation Plan) statutes.</p> <p>The Sacramento-San Joaquin Delta Reform Act ("Delta Reform Act") of 2009 sets forth the state's two "coequal goals" of providing more water supply reliability and restoring the Delta ecosystem. (Pub. Resources Code Section 29702(a); Water Code Section 85054.) The stated purpose driving the BDCP is achievement of those "co-equal" goals. However, the BDCP hinders its own objectives.</p> <p>The BDCP and its plan to construct large scale water conveyance infrastructure have the potential to "take" [Footnote 8] threatened and endangered species as defined under the Section 10 of the federal ESA (16 U.S. Code Section 1539) and its implementing regulations set forth the procedure for obtaining a permit allowing an incidental take of a listed species. The California ESA may provide for take authorization in connection with a NCCP. The BDCP seeks to become a HCP under the ESA and a NCCP under the CESA, which would purportedly guide water exports and habitat management for the next 50 years. However, the BDCP does not meet requirements for either a HCP or a NCCP.</p> <p>[Footnote 8: The ESA broadly defines "taking" of a listed species to include harassment,</p>	<p>The Delta Plan is currently the subject of litigation which has arisen since the issuance of the 2015 RDEIR/SDEIR and which could affect the legal requirements and/or implementation of the Delta Plan. Please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS for a discussion of the proposed projects conformance with the Delta Reform Act.</p> <p>Please see also Master Response 29 for compliance with the Endangered Species Act and Master Response 8 for further information on permitting.</p>

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		harm, pursuit, hunting, shooting, wounding, killing, trapping, capturing, or attempting to engage in any such conduct. (16 USC Section 1532[19].) CESA's definition of "take" is to "hunt, pursue, capture, or kill." [Cal. Fish & Game Code Section]86].	
1722	49	<p>The BDCP is not a valid HCP or NCCP.</p> <p>The BDCP cannot qualify as a HCP because it does not actually ensure the continued existence of the relevant endangered species. (50 C.F.R. [Section] 17.) The Endangered Species Act only allows for incidental take when the overall purpose of the authorized action is to "enhance the propagation or survival of the affected species." (15 U.S.C. [Section] 1539 (a)(1)(A).) The BDCP will actually harm several threatened Delta species.</p> <p>California's Natural Community Conservation Planning Act (Fish & Game Code Sections 2800-2835) provides for multispecies habitat planning and management. Its goal is to provide a broader framework for species and habitat management by preserving larger habitat systems. (See generally Chaparral Greens v City of Chula Vista, 50 Cal.App. 4th 1134, [1996].) In order for the California Department of Conservation to approve a NCCP, it must make numerous findings, supported by substantial evidence, as set forth in California Fish and Game Code section 2820.</p>	
1722	50	<p>The BDCP fails to meet Mandatory Statutory Criteria of a HCP and NCCP.</p> <p>Under the ESA, an Incidental Take Permit based on the HCP will only be issued if the Secretary of the Interior finds that (1) the taking will be incidental; (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking; the applicant will ensure that adequate funding for the plan will be provided; and (4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. (16 USC [Section] 1539(a)(2)(B).) The BDCP cannot meet all of these criteria.</p>	
1722	51	<p>The HCP/NCCP Violates C/ESA Mandates because it Harms Species.</p> <p>The tunnels will be detrimental to endangered species, in violation of the C/ESAs. "[A]n agency may not take action that will tip a species from a state of precarious survival into a state of likely extinction. Likewise, even where baseline conditions already jeopardize a species, an agency may not take action, that deepens the jeopardy by causing additional harm." (National Wildlife Federation v. National Marine Fisheries Service, 524 F.3d 917, 930 (9th Cir. 2007).) Federal agencies have a duty to ensure that their authorization of a project will not jeopardize the survival of listed fish or adversely modify the species' critical habitat. (Center for Biological Diversity v. U.S. Bureau of Land Management, 698 F.3d 1101, 1127-8 (9th Cir. 2012).) Here, the tunnels and related diversions affect designated critical habitat for certain listed species of salmonids.</p>	
1722	52	<p>The model used to analyze the effects of the BDCP is replete with errors and unrealistic assumptions, as discussed in the Modeling Review (see ATT 1). Aside from calling into question the soundness of the BDCP analysis in general, the Modeling Review also reveals that the errors in the model effectively obscure harmful impacts to aquatic species, in violation of C/ESA requirements for a valid HCP/NCCP.</p> <p>The BDCP model does not accurately reflect reasonably foreseeable conditions and changes in CVP and SWP operations due to the BDCP. BDCP's "High Outflow Scenario" ("HOS") is not sufficiently defined for analysis. The HOS requires additional water (Delta outflow) during certain periods in the spring. Analyses using the HOS are present throughout the BDCP itself,</p>	<p>For more information regarding the additional subalternatives modeling results from the RDEIR/SDEIS to the FEIR/EIS please see Appendix 5F of the FEIR/EIS and Master Response 30.</p> <p>Specifically as it relates to outflow, model results show that long-term average Delta outflow under Alternative 4 (scenarios H1 - H4 at LLT) would be similar to that under Existing Conditions and No Action Alternative, with a minor increase in flows during the winter months and a minor reduction in flows during the spring months relative to Existing Conditions due to the shift in system inflows caused by climate change, as well as increased water demand expected in the LLT. In wet water year types, this trend is more evident, while in other water year types, Delta outflow under Existing Conditions and the No Action Alternative is generally within the range of Alternative 4 H1 - H4 scenarios. For more information and</p>

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		<p>including the Fish Life Cycle modeling (Appendix 5G), Critical Habitat and Essential Fish Habitat analysis (Appendix 5I); Flow Passage Salinity and Turbidity (Appendix 5C), to name just a few of the analyses critical to understanding the BDCP's effect on biological resources, including sensitive aquatic species.</p> <p>The BDCP assumes that it will primarily be the SWP that meets the new, additional outflow requirement (the HOS). However, it is not clear that this will be the case because Reclamation and DWR have historically defaulted to the Coordinated Operations Agreement ("COA") and balanced water accounting under the COA -- even when in situations when the COA does not apply. Therefore, if the SWP must provide new outflow under the HOS, DWR could seek a water allocation adjustment from the CVP under the COA. Absent any agreement by the SWP to undertake these new outflow obligations or to amend the terms of the COA, the BDCP Model is relying on a faulty counter-factual assumption about project operations. As a result, it overstates the impacts of increased Delta outflow on the SWP and understates the effects on the CVP and its contractors, such as Friant Water Authority's members.</p> <p>Furthermore, as described in detail in the Modeling Review, there is no apparent source of CVP or SWP water to satisfy both the increased Delta outflow requirements and perform the water balancing required under the COA without substantially depleting upstream water storage. In the Modeling Review, the Reviewers note that "[i]t appears, through recent public discussions regarding the High Outflow Scenario, that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water. However, this approach is unrealistic. During most of the spring, when BDCP proposes that Delta outflow be increased, agricultural water users are not irrigating. This means that there is not sufficient transfer water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs. Releasing stored water to meet the increased Delta outflow requirements could potentially impact salmonids on the Sacramento and American River systems." (Modeling Review, p.18.)</p> <p>The independent analysis of the BDCP model reveals that the BDCP makes incorrect assumptions that overestimate the BDCP's benefits to the endangered delta smelt. For example, in projecting October outflow from the Delta Cross Channel ("DCC"), the BDCP model assumes that the DCC will remain open. In reality, however, operational practices are to close the DCC when south Delta exports are low, as they often are in October. The effect of this modeling assumption is that October outflows are overstated, and the BDCP projects illusory improvement of conditions for delta smelt. (Modeling Review, p. 17-18.)</p> <p>Excessive water diversions already stress the Delta. The independent modeling (see ATT 1) of the BDCP's future affects demonstrates that the BDCP would export even more water than is considered in the EIR/EIS (which relies on the faulty assumptions in BDCP model). This will irreparably harm numerous commercial and sport fisheries and have adverse impacts on Chinook salmon and Dungeness crab.</p>	<p>specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix. Please also see Master Response 30. For additional response on the BDCP effects analysis please see Master Response 5.</p>
1722	53	<p>The Project Lacks Adequate Funding in Violation of C/ESA.</p> <p>California Fish and Game Code, section 2081(b)(4), requires applicants for take authorization to "ensure adequate funding to implement [mitigation and other] measures ..., and for monitoring compliance with, and effectiveness of, those measures." Likewise, under the federal ESA, the applicant for take authorization must ensure that "sufficient funding will be provided." (16 U.S.C. 1539(a)(2)(B)(iii).) The NCCP Act of 2003 echoes these</p>	<p>Please see Master Response 5 about funding for the project and mitigation measures and Master Response 45 concerning required project approvals and other related actions.</p>

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		<p>requirements. (Cal. Fish & Game Code 2820(a)(10).)</p> <p>The EIR/EIS does not meet these legal standards. It is at best vague and at worst misleading when it purports to assure the reader that "[f]unding from a variety of state and federal sources will be available to pay for the majority of the conservation measures that will provide the substantial public benefits of the BDCP." (BDCP, p. 1-2). The project, estimated to cost at least \$25 billion, depends not only on funding from the current proposed bond -- which the Governor recently has indicated he will not support. Moreover, bonds are subject to amendment and must be approved by a vote of the public, neither of which can be assumed. On top of this, the BDCP also relies on a second, as-yet undefined bond, and undefined federal funding. It is not clear who will pay what amount to fund the project. This type of critical information must be worked out before the documents can undergo meaningful public review. [Footnote 10: Indeed, the Legislative Analyst's Office notes that "If bond funds are not available in the near future and no additional funding sources are identified, some ecosystem restoration may not be funded, including the restoration actions needed before the tunnels begin operation." (Legislative Analyst's Office, Report on Financing the Bay Delta Conservation Plan, Feb. 12, 2014, p. 7.)]</p> <p>The NCCP Act contains similar requirements to those set forth in the ESA for HCPs. It follows, then, that the BDCP is deficient as a NCCP for the reasons it fails as a HCP. For example, section 2820(b)(3)(A) requires adequate funding for the plan. As explained above in connection with the HCP, the BDCP cannot demonstrate that adequate funding is in place. Rather, the funding for BDCP is uncertain and dependent on factors that are impossible to count on, such as the inclusion of BDCP components in two future water bonds and the passage of both of these bonds by California voters. The NCCP Act states that failure to provide funding can result in revocation of the take permit. Extrapolating from this, if the BDCP fails to secure or retain funding for its ambitious project, including the NCCP component, then it cannot secure a take permit and cannot proceed with the project. Given the likelihood of funding problems over the project decade-long construction period, this scenario is a distinct possibility. With no funding and no permit, a partially constructed large scale infrastructure project would be more detrimental to the ecosystem than if construction had never started.</p> <p>With tenuous and illusory funding plans, the BDCP cannot provide assurances for other required components of the NCCP and HCP.</p>	
1722	54	<p>The vague project description cannot form the basis for Incidental Take Authorization.</p> <p>Applicants seeking an incidental take permit must provide "a complete description of the activity sought to be authorized." (50 CFR [Section] 17.22(b)(1)(i); [Section] 222.307(b)(4)("detailed description").) The project description is so vague as to be misleading. It would be inappropriate to rely on this vague description as the basis for authorizing take of candidate, threatened or endangered species.</p>	<p>For discussion of the adequacy of the project description please also see Master Response 2 and the response to comment 1772-5. For additional discussion of permitting and ESA compliance please see Master Responses 45 and 29, respectively.</p>
1722	55	<p>The Alternatives to Take are Inadequate.</p> <p>Chapter 9 of the BDCP purports to consider alternatives to take as required by the C/ESA. Like the deficient alternatives analysis in the EIR/EIS, the BDCP's alternatives to take are not true alternatives at all but merely variations of the same action as the proposed project: ten out of the eleven alternatives to take would involve the same type of large-scale construction and water diversions as the proposed project.</p>	<p>Take alternatives are designed to meet the federal ESA standard only. There is no regulatory requirement in CESA or the NCCP Act for such an analysis. See Master Response 5 for an explanation of the adequacy of the take alternatives in Chapter 9.</p> <p>See Master Response 4 for a discussion of the adequacy of alternatives in the EIR/EIS. Because Alternative 4A would not serve as HCPs/NCCPs under ESA Section 10 and the NCCPA, but rather would achieve incidental take authorization under ESA Section 7 and CESA Section 2081(b). As a result, the Alternatives to Take analysis presented in the draft BDCP and required by Section 10 of the ESA is not applicable to the new</p>

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1722	56	<p>The BDCP cannot issue "No Surprises" assurances to Federal agencies or Federal water contractors.</p> <p>The draft BDCP, in Chapter 6, improperly attempts to provide "no surprises" assurances to federal agencies and federal contractors and permittees. In general, permits under HCPs and Natural Community Conservation Plan may have provisions that protect permittees from having to provide additional mitigation because of "surprises" such as changed or unforeseen circumstances that occur after issuance of the permit. In connection with a permit under the HCP, the BDCP states:</p> <p>"Under the No Surprises rule (63 FR 8859, Feb. 23, 1998), once an incidental take permit has been issued pursuant to an HCP, and its terms and conditions are being fully implemented, the federal government will not require additional conservation or mitigation measures, including land, water (including quantity and timing of delivery), money, or restrictions on the use of those resources (63 FR 8868). If the status of a species addressed under an HCP unexpectedly declines, the primary obligation for undertaking additional conservation measures rests with the federal government, other government agencies, or other nonfederal landowners who have not yet developed HCPs."</p> <p>(BDCP, p. 6-28)</p> <p>Similarly, in connection with the permit under the NCCP Act, the BDCP states:</p> <p>"Under the NCCPA, California Dept. of Fish and Wildlife provides assurances to the Permittees (those Plan participants, excluding Reclamation, that receive permits from CDFW pursuant to Section 2835 of the NCCPA) commensurate with the long-term conservation assurances and associated implementation measures of the BDCP."</p> <p>(BDCP, p. 6-29).</p> <p>Such assurances cannot be provided to federal agencies because federal agencies owe a higher and enduring duty of care to listed species than non-federal entities. (See 50 CFR Sec. 17.22[b][5] [stating that "no surprises" assurances "cannot be provided to Federal agencies."].) The BDCP acknowledges, in connection with the NCCP, that the Bureau of Reclamation is not eligible for the "no surprises" assurance (although it does not explain the statutory prohibition on this.). Yet the BDCP curiously does not exclude Reclamation from the section discussing "no surprises" under the HCP. And because the purpose of the take permits is to allow for operation, by various contractors, of a federal water project (including most of the Central Valley Project) that is subject to Section 7 consultation, it is likewise improper to extend "no surprises" assurances to the federal water contractors. The practical effect of giving these federal contractors Section 10 assurances and not extending it to the other federal contractors would be to put all of the other water contractors' water supplies at risk of being reallocated to species, since Reclamation's obligations under the Endangered Species Act cannot be capped and the only water left available to Reclamation would be the project yield it owed to other contractors. Obviously, this result fundamentally conflicts with the law of California water rights, which requires that the project cause "no injury" to existing legal users of water. Also, providing "no surprises" assurances to federal water contractors who are relying on the operations of a federal water project--if it were even legal--would only serve to make it more difficult to put in place necessary measures for</p>	<p>preferred alternative, 4A.</p> <p>For additional discussion of permitting and ESA compliance please see Master Responses 45 and 29, respectively.</p>

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		species protection.	
1722	57	[ATT 1: Attachment 1 -- Report on Review of Bay Delta Conservation Program Modeling, MBK Engineers and Dan Steiner, 6/20/2014. See also BDCP1633-ATT 1, BDCP1563-ATT 38.1, and BDCP1597-ATT 6.1, and BDCP1674-ATT 3.1.]	<p>This comment describes an attachment to the comment letter. The attachment does not raise any additional issues related to the environmental analysis in the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS that are not already addressed in comment referencing the attachment or the Final EIR/EIS.</p> <p>See responses to comments in this letter that address the modeling review attachment.</p> <p>Please also note that all comments received during the 2013 and 2015 public comment period are included in the FEIR/EIS. Please refer to the table of commenters to locate the letter of interest.</p>
1722	58	<p>[From ATT 1:]</p> <p>Implementation of Climate Change:</p> <p>The analysis presented in the BDCP Documents attempts to incorporate the effects of climate change at two future climate periods: the early long term (ELT) at approximately the year 2025; and the late long term (LLT) at approximately 2060. As described in the BDCP documents [Footnote 2: BDCP EIR/EIS Appendix 5A, Section A and BDCP HCP/NCCP Appendix 5.A.2], other analytical tools were used to determine anticipated changes to precipitation and air temperature that is expected to occur under ELT and LLT conditions. Projected precipitation and temperature was then used to estimate runoff into from the watersheds over an 82-year period of variable hydrology; these time series were then used as inputs into the BDCP Model. A second aspect of climate change, the anticipated amount of sea level rise, is incorporated into the BDCP CalSim II model by modifying flow-salinity relationships that estimate salinity within the Delta based on sea level and flows within Delta channels.</p> <p>This Report does not evaluate the analytical processes by which reservoir inflows and runoff were developed, nor does it evaluate the modified flow-salinity relationships that are assumed due to sea level rise; those items could be the focus of another independent review. This Report is limited to evaluating how the modified flows were incorporated into the BDCP Model and whether the operation of the CVP and SWP water system in response to the modified flows and the modified flow-salinity relationship is reasonable for the ELT and LLT conditions. This work reviews the assumed underlying hydrology and simulated operation of the CVP/SWP, assumed regulatory requirements, and the resultant water delivery reliability.</p>	<p>The discussion in the first paragraph of this comment is consistent with information presented in the EIR/EIS. The second paragraph is a summary of what is not included in the overall study included with comments on this letter.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1722	59	[ATT 1: att1 -- Table 1. Scenarios used to evaluate climate change.]	This comment describes an attachment to the comment letter. The attachment does not raise any additional issues related to the environmental analysis in the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS that are not already addressed in comment referencing the attachment or the Final EIR/EIS.
1722	60	<p>[From ATT 1:]</p> <p>Climate change implementation is incorrect, yielding non-sensible results.</p> <p>Climate change hydrology in the Upper San Joaquin River basin (above Friant Dam) was incorporated incorrectly into the BDCP Model, resulting in non-sensible results. Because overall CVP operations and the San Joaquin River are interconnected, this error causes problems throughout the CVP system. With the coordinated operations of the CVP and SWP, this error can affect the SWP system.</p>	<p>The climate change assumptions were consistent across all the Proposed Project Alternatives including the No Action Alternative. As shown in the FEIR/EIS, San Joaquin River operations remain unchanged under the action alternatives compared to the No Action Alternatives. The error in the Millerton climate-modified inflow was found to only affect Millerton storage and flows in the San Joaquin River, and it had only minor impacts to the Delta and Sacramento River operations.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as</p>

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		<p>Specifically, under climate change, inflow to Millerton Lake is expected to decrease (BDCP DEIR/EIS, Appendix 29B). However, when climate change was implemented into the BDCP Model, it was done incorrectly such that: (1) the inflow into Millerton Lake was not adjusted for climate change and is thus overestimated, and yet (2) the flood control operations and water allocation decisions for Millerton Lake were adjusted for climate change as if the inflow was reduced. The net effect is that storage in Millerton Lake is overestimated; in fact, the BDCP model indicates that the amount of water stored in Millerton Lake will actually be increased as a result of climate change even though the inflow to the lake is projected to be reduced (i.e., non-sensible). This error results in the overestimation of Millerton Lake storage causing an overestimation of reservoir releases for flood control purposes and available water downstream at the Mendota Pool; these unreasonably high flood releases are then diverted by CVP exchange contractors in lieu of taking CVP Delta water, which means that either CVP Delta exports are reduced or the water is backed up into San Luis Reservoir (SLR), overestimating SLR storage. Furthermore, any excess water from the Millerton Lake that is not diverted at Mendota Pool would continue downstream and ultimately increase Vernalis flow, which subsequently affects Delta exports. Ultimately, changes in exports have the potential to affect upstream reservoir releases (i.e., from Lake Shasta) as well.</p> <p>This is a situation where one seemingly minor error cascades through the entire system. This error exists in all BDCP Model scenarios (baselines and project alternatives) that have climate change incorporated at either ELT (Early Long Term) or LLT (Late Long Term) conditions. In other words, all model results reported in the BDCP and associated Draft EIR/EIS contain this error, with the only exception of the Existing Biological Conditions baselines numbers 1 and 2 (EBC1 and EBC2), which are evaluated in the BDCP.</p>	<p>it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1722	61	<p>[From ATT 1:]</p> <p>Effects of climate change create unrealistic operations.</p> <p>Review of the BDCP Model output for the Without Project condition with climate change assumptions for the ELT (Early Long Term) or LLT (Late Long Term) (NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term), respectively) reveal that the model is operated beyond its usable range. The purpose of CalSim II is to simulate how the CVP and SWP systems would be operated in order to meet regulatory requirements and water delivery objectives based on a certain amount of precipitation and runoff. When the precipitation patterns and resultant runoff were changed in the BDCP Model for climate change, the logic regarding how the system is operated to meet the regulatory and water delivery objectives was not changed. The net effect is that neither the regulatory criteria nor the delivery objectives are met.</p> <p>With rising temperatures and shifting precipitation patterns with less snow, temperature criteria on the Sacramento River will become increasingly more difficult to meet. For instance, the BDCP Model includes an assumption that equilibrium temperatures in the Sacramento River between Shasta and Gerber will increase on an average annual basis by 1.6°F by 2025 (ELT) by 3.3°F by 2060 (LLT). NMFS 2009 Biological Opinion specifies temperature targets of 56°F in the Sacramento River between Balls Ferry and Bend Bridge for the protection of salmon. Because of lower storage conditions in Shasta Lake and the magnitude of temperature increase in the assumptions is so large, the BDCP Model shows that the probability of exceeding the mortality threshold in the Sacramento River at Bend Bridge in August and September increases from approximately 80% in the No Action</p>	<p>The proposed project operations do not change operational criteria of Shasta, Trinity, or Folsom Reservoirs or any San Joaquin River and tributaries water storage facilities. It is recognized that operations of the SWP and CVP reservoirs and other reservoirs probably will be modified in the future in response to climate change and other water resources operations. However, it would be speculative to develop changes in operations under the No Action Alternative or Cumulative Impact Analysis; and these changes are not consistent with the Project Objectives and Purpose and Need statement for the action alternatives. Future changes in reservoir operations would require separate engineering environmental analyses under CEQA and NEPA, and revised reservoir operations permits which could affect SWP and CVP operations. For additional information regarding purpose and need, please see Master Response 3.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of</p>

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		Alternative to 90% to 95% by 2025 (under ELT conditions) and to 95% to 100% by 2060 (under LLT conditions). This significant difference shows the overwhelming influence that the climate change assumptions have on the BDCP Model results.	the CEQA/NEPA process.
1722	62	<p>[From ATT 1:]</p> <p>Reservoir Storage: Under the climate change scenarios, reservoir storage (particularly in the CVP system) is operated very aggressively so that the reservoirs are drawn down to an extremely low level (termed "dead pool") in approximately 1 of every 10 years, even without the BDCP. At dead pool level, little or no water can be released from the reservoir -- not for fish, not for drinking water, not for agriculture. For example, since Folsom Reservoir became operational in 1955, the storage has never been drawn down to reach dead pool (which is approximately 100,000 acre-feet); the lowest storage level on record was 147,000 acre-feet at the end of September 1977. However, the BDCP Model predicts that, under climate change, the reservoir will be about 100,000 acre-feet or about 30% lower than its historical low in 10% of years. Some municipalities, such as the city of Folsom, are entirely dependent on reservoir releases for drinking water. Reaching dead pool would cut municipal deliveries below the level required to maintain public health and safety. In reality, and to avoid such dire circumstances, the CVP and SWP would likely request that regulatory agencies modify standards to conserve storage and would likely mandate conservation (or rationing) by water users. Similar steps were taken early in 2014 to reduce water diversions and reservoir releases for fishery needs and Delta requirements. Emergency measures such as these are not simulated in the model, so the BDCP Model does not reflect reasonable future operations with climate change.</p> <p>With the predicted changes in precipitation and temperature implemented in the BDCP Model, there is simply not enough water available to meet all regulatory objectives and water user demands. Yet the BDCP Model continues its normal routine and thus fails to meet its objectives. In this aspect, the BDCP Model simply does not simulate reality. For instance, if the ELT (Early Long Term) and LLT (Late Long Term) conditions actually occur, the CVP and SWP would likely adapt to protect water supplies and the environment. Examples of reactions to climate change would likely include: (1) updating operational rules regarding water releases for flood protection; (2) during severe droughts, emergency drought declarations could call for mandatory conservation and changes in some regulatory criteria similar to what has been experienced in the current and previous droughts ; and (3) if droughts become more frequent, the CVP and SWP would likely revisit the rules by which they allocate water during shortages and operate more conservatively in wetter years. The likelihood of an appropriate operational response to climate change is supported by the many modifications to CVP and SWP operations made during the winter and spring of 2014 to respond to the current drought. The BDCP Model is, however, useful in that it reveals that difficult decisions must be made.</p>	<p>The "dead pool" conditions presented in the CALSIM II model results in the EIR/EIS are developed from calculated monthly average reservoir volumes. Because the model only calculates and reports SWP and CVP water operations at an average monthly basis, the model cannot simulate changes that occur on a weekly basis by water users and SWP and CVP operations. In addition, the model cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes average operating criteria for all dry periods, and does not reflect specific changes. The dead pool conditions occur in the No Action Alternative as compared to the Existing Conditions because the model includes changes in precipitation without making changes in water diversion patterns. The EIR/EIS analysis considers changes between the frequency of dead pool conditions under the alternatives and the No Action Alternative (both with the same climate change assumptions) to determine if the changes are adverse or beneficial.</p> <p>It is recognized that operations of the SWP and CVP reservoirs and other reservoirs probably will be modified in the future in response to climate change and other water resources operations. However, it would be speculative to develop hypothetical changes in operations under the No Action Alternative or Cumulative Impact Analysis; and these changes are not consistent with the Project Objectives and Purpose and Need statement for the action alternatives. Future changes in reservoir operations would require separate environmental analyses under CEQA and NEPA, and revised reservoir operations permits which could affect SWP and CVP operations.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1722	63	<p>[From ATT 1:]</p> <p>BDCP CalSim II Assumptions</p> <p>The assumptions for these runs are defined in the December 2013 Draft BDCP [Footnote 4: BDCP EIR/EIS Appendix 5A.] and associated Draft EIR/EIS.</p> <p>Each of the no action alternatives assumes the same regulatory requirements, generally representing the existing regulatory environment at the time of study formulation (February 2009), including Stanislaus ROP the National Marine Fisheries Services (NMFS) Biological</p>	<p>The No Action Alternative and all of the action alternatives included assumptions for the New Melones Reservoir operations and Reclamation's responses to the Vernalis Adaptive Management Program based upon the continuation of existing policy and management at the time of publication of the Notice of Preparation. Because the model runs are used in a comparative manner, and not a predictive manner to develop absolute values, and because operations on the San Joaquin River are not modified in action alternatives as compared to the No Action Alternative, the effects of these two sets of operations on the San Joaquin River would not affect evaluation of the changes in Delta conditions due to implementation of the action alternatives.</p>

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		<p>Opinion (BO) (June 2009) Actions III.1.2 and III.1.3, Trinity Preferred EIS Alternative, NMFS 2004 Winter-run BO, NMFS BO (June 2009) Action I.2.1, SWRCB WR90-5, CVPIA (b)(2) flows, NMFS BO (June 2009) Action I.2.2, ARFM NMFS BO (June 2009) Action II.1, no SJRRP flow modeled, Vernalis SWRCB D1641 Vernalis flow and WQ and NMFS BO (June 2009) Action IV.2.1, Delta D1641 and NMFS Delta Actions including Fall X2 Fish & Wildlife Service (FWS) BO (December 2008) Action 4, Export restrictions including NMFS BO (June 2009) Action IV.11.2v Phase II, OMR FWS BO (December 2008) Actions 1-3 and NMFS BO (June 2009) Action IV.2.3v.</p> <p>The modeling protocols for the recent USFWS BO (2008) and NMFS BO (2009) have been cited as being cooperatively developed by Reclamation, NMFS, U.S. Fish and Wildlife Service (USF&WS), California Department of Fish and Wildlife (CDF&W), and DWR.</p> <p>Each of the BDCP no action alternatives -- NAA, NAA-ELT, and NAA-LLT (No Action Alternative, No Action Alternative-Early Long Term, and No Action Alternative-Late Long Term) -- uses the same New Melones Reservoir and other San Joaquin River operations. At the time of these studies' formulation, the NMFS BO (June 2009) had been recently released. Also, the San Joaquin River Agreement (SJRA), including the Vernalis Adaptive Management Program (VAMP) and its incorporation into D1641 for Vernalis flow requirements were either still in force or being discussed for extension. As a component of study assumptions, the protocols of the SJRA and an implementation of the NMFS BO for San Joaquin River operations (including New Melones Reservoir operations) are included in the studies. These protocols, in particular the inclusion of VAMP which has now expired, are not appropriate as an assumption within either the No Action or Alternative Scenarios within a full disclosure of BDCP impacts. Although appropriate within the identification of actions, programs and protocols present at the time of the NOI/NOP, they are not representative of current or reasonably foreseeable operations.</p>	<p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1722	64	<p>[From ATT 1:]</p> <p>The BDCP Model assumes no San Joaquin River Restoration Program releases in the future operation of the Friant Division of the CVP. While assuming no difference in the current and future operation of the Friant Division avoids another difference in existing and projected future hydrology of the San Joaquin River, the assumption does not recognize the existence of the San Joaquin River Restoration Program. Results of CVP and SWP operations, in particular as affected by export constraints dependent on San Joaquin River flows and their effect on OMR (Old & Middle Rivers), E/I (Export to Inflow Ratio) and I/E (Inflow to Export Ratio) diversion constraints, would be different with a different set of assumptions for San Joaquin River operations.</p> <p>The habitat restoration requirements in the 2008 FWS BO (Biological Opinion) and the 2009 NMFS BO are not included in the NAA (No Action Alternative) baselines. Although the restoration is required to be completed either with or without completion of the BDCP, the restoration was only analyzed as part of the with project scenarios.</p>	<p>The No Action Alternative and the action alternatives included qualitative assumptions for the San Joaquin River Restoration Program because at the time of publication of the Notice of Preparation and Notice of Intent Reclamation was evaluating alternatives within a separate NEPA process. Because the model runs are used in a comparative manner, and not a predictive manner to develop absolute values, and because operations on the San Joaquin River are not modified in the action alternatives as compared to the No Action Alternative, the effects of these two sets of operations on the San Joaquin River would not affect evaluation of the changes in Delta conditions due to implementation of the action alternatives.</p>
1722	65	<p>[From ATT 1:]</p> <p>The benchmark study upon which the BDCP Model was built contains inaccuracies that affect the analysis.</p> <p>CalSim II is continuously being improved and refined. As the regulatory environment changes and operational and modeling staff work together to improve the model's</p>	<p>Modeling for the BDCP and the BDCP EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in Alternatives 2 through 9 in the BDCP EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with</p>

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		<p>capability to simulate actual operations, the model is continually updated. The BDCP Model relied upon a version of CalSim II that dates back to 2009, immediately after the new Biological Opinions (BiOps) from the NMFS (National Marine Fisheries Service) and the United States Fish and Wildlife Service (USFWS) significantly altered the operational criteria of the CVP and SWP. In the last 4 to 5 years, DWR, [Bureau of] Reclamation, and outside modeling experts have worked together to improve the model. Changes include better (more realistic) implementation of the new BiOps and numerous fixes to the code. Since CalSim II is undergoing continual improvements, there will always be "vintage" issues in that by the time a project report is released, the model is likely slightly out of date. However, in this case -- with the major operational changes that have occurred in the new regulatory environment -- many issues have been identified and fixed in the last 4 to 5 years that have a significant effect on model results. CalSim II modeling for the DWR 2013 Delivery Reliability Report contains numerous modeling updates and fixes that significantly alter results of the BDCP Model. A key modeling revision in the 2013 DWR modeling was fixing an error regarding artificial minimum instream flow requirements in the Sacramento River at Hood. An "artificial" minimum instream flow requirement had been specified; the requirement is artificial in that it does not represent a regulatory requirement, but rather is a modeling technique to force upstream releases to satisfy Delta needs.</p>	<p>DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the BDCP EIR/EIS. Similarly, when Alternative 4 was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4 as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4. It should be noted that the modeling used in the BDCP EIR/EIS must be used in a comparative manner and not to define absolute values. Please see Master Response 30 about the modeling approach.</p>
1722	66	<p>[From ATT 1:]</p> <p>Assumptions for the "High Outflow Scenario" (HOS) are unrealistic.</p> <p>The HOS is one branch of the BDCP Decision Tree, also identified as Alternative 4, operational scenario H4 in the DEIR/EIS. The HOS requires additional water (Delta outflow) during certain periods in the spring, in excess of the current regulatory requirements. The BDCP Model assumes that if the required additional Delta outflow cannot be met by reducing exports, this increased Delta outflow will be met by releases made by the SWP's Oroville Reservoir. The assumptions regarding how much water to release from Oroville to attempt to meet the proposed regulations and how much and when to refill Oroville are unrealistic.</p> <p>According to the Draft EIR/EIS [Footnote 8: Draft EIR/EIS, Appendix 5A-C, Table C-13-20-2], the HOS will reduce SWP south of Delta water deliveries for municipal and industrial (M&I) water users 7% below the level that they would receive without the BDCP (on average). During dry and critical years, SWP south of Delta water deliveries for M&I and agricultural water users will drop 17% below the level that they would receive without the BDCP. In other words, according to the BDCP Model results SWP Contractors would get less water than they would otherwise get without BDCP.</p> <p>CVP and SWP obligations for providing flow to satisfy Delta outflow requirements is described in the Coordinated Operations Agreement (COA). Because the CVP and SWP share responsibility for meeting required Delta outflow based on specific sharing in the agreement, it is not reasonable to conclude that CVP water supplies would increase an average of 70 TAF while SWP water supplies decrease on average of 100 TAF under the HOS. The manner in which this alternative is modeled is inconsistent with existing agreements and operating criteria. If the increases in outflow were met based on COA, there would likely be reductions in Shasta and Folsom storage that would likely cause adverse environmental impacts, which have not been modeled or analyzed in the BDCP EIR/EIS.</p> <p>Furthermore, there is no apparent source of water to satisfy the increased outflow requirements and pay back the COA debt. It appears, through recent public discussions</p>	<p>As described in Appendix 5A, Section B, of the EIR/EIS flows to meet the Delta outflow criteria based upon the State Water Resources Control Board Decision 1641 and the 2008 USFWS biological opinion are provided by a combination of SWP and CVP reservoir releases and limitations on Delta exports. Under Alternatives 4 H2 and 4 H4, water to support enhanced spring Delta outflow was provided by additional water releases from reductions in Delta exports and releases from Lake Oroville. The enhanced spring Delta outflow was considered to be met outside of the Coordinated Operations Agreement which defines sharing criteria between the SWP and CVP. This would result in reductions in SWP water contract deliveries as indicated in Appendix 5A, Section C, Modeling Results. Under Alternative 4A, the enhanced spring Delta outflow was only met by reduction in Delta exports.</p> <p>For additional information regarding modeling, please see Master Response 30.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>

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		<p>regarding the HOS that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water sources. However, this approach is unrealistic. During most of the spring, when BDCP proposes that Delta outflow be increased, agricultural water users are not irrigating. This means that there is not sufficient transfer water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs.</p>	
1722	67	<p>[From ATT 1:]</p> <p>San Luis Reservoir operational assumptions produce results that are inconsistent with real world operations.</p> <p>San Luis Reservoir (SLR) is an off-stream reservoir located south of the Delta and jointly owned and operated by CVP and SWP. The reservoir is used to store water that is exported from the Delta when available and used to deliver water to CVP and SWP Contractors when water demands exceed the amount of water that can be pumped from the Delta. The decision of when to move water that is stored in upstream reservoirs, such as Shasta, Folsom, or Oroville, through the Delta for export to fill SLR is based on the experience and expert judgment of the CVP and SWP operators.</p> <p>CalSim II attempts to simulate the expert judgment of the operators by imposing artificial operating criteria; the criteria are artificial in the sense that they are not imposed by regulatory or operational constraints but rather imposed as a tool to simulate expert judgment. One such artificial operating criteria is the SLR target storage level: CalSim II attempts to balance upstream Sacramento Basin CVP and SWP reservoirs with storage in SLR by setting artificial target storage levels in SLR, such that the CVP and SWP will release water from upstream reservoirs to meet target levels in SLR. The artificial target storage will be met as long as there is ability to convey water (under all regulatory and physical capacity limits) and as long as water is available in upstream reservoirs. SLR target storage criteria are also sometimes described in section 4.2 as the "San Luis rule-curve".</p> <p>In the BDCP Model, CVP and SWP reservoir operating criteria for Alternative 4 H3 ELT (Early Long Term) differ from the corresponding without project scenario (e.g. NAA-ELT (No Action Alternative-Early Long Term)). The difference in criteria and result is primarily driven by changes to the artificial constraint used to determine when to fill SLR: the SLR target storage. In Alternative 4 H3 ELT, SLR target storage is set very high in the spring and early summer months, and then reduced in August and set to SLR dead pool from September through December. This change in SLR target storage relative to the no action alternative causes upstream reservoirs to be drawn down from June through August and then recuperate storage by cutting releases in September. This change to the artificial operating criteria SLR target storage causes changes in upstream cold water pool management and affects several resource areas.</p> <p>In addition to changes in upstream storage conditions, changes in SLR target storage cause SLR storage to drop below a water supply concern level (300,000 acre-feet) in almost 6 out of every 10 years under ELT conditions and more than 7 out of every 10 years under LLT (Late Long Term) conditions for Alternative 4 H3. When storage in SLR drops below this 300,000 acre-foot level, algal blooms in the reservoir often cause water quality concerns for drinking water at Santa Clara Valley Water District. The change in SLR target storage also causes SLR levels to continue to drop and reach dead pool level for the SWP in 4 out of every 10 years and also dead pool level for the CVP in 1 out of every 10 years under the ELT</p>	<p>One of the goals for the EIR/EIS impact analysis modeling is to maintain similar end-of-May and end-of-September carryover storage conditions as simulated under the No Action Alternative. In the action alternatives with the north Delta diversion facility, the availability of the additional export capacity in the winter and spring months compared to the No Action Alternative allows capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. This also changes the release patterns from the upstream reservoirs. However, the end-of-May and end-of-September storage conditions are similar to the No Action Alternative under Alternative 4. The effects of modified release patterns and changes in the storage conditions on the river temperatures are evaluated in Chapter 11, Fish and Aquatic Resources, in the EIR/EIS.</p> <p>The San Luis Reservoir rule curve is an input to CALSIM II which provides a target storage each month that is dependent on the South-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgement of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta exports, different San Luis Reservoir rule curves can result in differences in upstream reservoir release patterns, and Delta exports. Assumed San Luis Reservoir rule curve could differ depending on the available export capacity during winter and spring months, and the need to protect upstream carryover storage in the fall months.</p> <p>For the No Action Alternative simulation, the San Luis Reservoir rule curve is managed to maximize filling during summer and fall months when the Delta export pumping is less constrained to minimize situations in which south-of-Delta shortages may occur due to lack of storage or exports. Under the action alternatives with the north Delta diversion facility, the CALSIM II San Luis Reservoir rule curve was modified in expectation that the new north Delta diversion facility would allow capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. Additional modifications to the rule curve were included to preserve upstream carryover storage conditions while minimizing south-of-Delta shortages in the fall months. Under Alternative 4, the San Luis Reservoir storage conditions are also affected by the restrictive south Delta export operations in October.</p> <p>With regards to upstream reservoir effects, please see Master Response 25.</p>

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		<p>conditions.</p> <p>Reaching dead pool level in SLR creates shortages to water users south of the Delta. Although some delivery shortages are due to California Aqueduct capacity constraints, the largest annual delivery shortages are a result of inappropriately low SLR target storage. Average annual Table A shortages due to artificially low SLR storage levels increased from 3 TAF in the NAA-ELT scenario to 35 TAF in the Alt4-ELT scenario. Such shortages occurred in 2% of simulated years in the NAA-ELT scenario and 23% of years in the Alt4-ELT scenario. In addition to the inability to satisfy Table A allocations, low storage levels cause loss of SWP Contractors' Article 56 water stored in SLR. Average annual Article 56 shortages were 43 TAF in the Alt4-ELT scenario because of low San Luis storage and 5 TAF in the NAA-ELT scenario. Low San Luis storage causes Article 56 shortages in 27% of simulated years in the Alt4-ELT scenario as compared to 5% of simulated years in the NAA-ELT. Another consequence of low storage levels in SLR is a shift in water supply benefits from Article 21 to Table A.</p> <p>In summary, the operational assumptions for SLR are unrealistic in Alternative 4 because they create problems in upstream storage reservoirs and create shortages for south of Delta water users that would not occur in the real world. In reaching this conclusion, the Reviewers met with operators from CVP and SWP to review the BDCP Model results and discussed real-time operations. The operators provided guidance in selection of superior assumptions, which results in more realistic operations in the independent model.</p>	
1722	68	<p>[From ATT 1:]</p> <p>Delta Cross Channel (DCC) operational assumptions overestimate October outflow</p> <p>When south Delta exports are low due to regulatory limits, and upstream reservoirs are making releases to meet the instream flow objectives at Rio Vista, operators have the ability to close the Delta Cross Channel (DCC) in order to reduce the required reservoir releases (by closing the DCC a greater portion of water released from the reservoirs stays in the Sacramento River to meet the Rio Vista requirements). As long as the Delta salinity standards are met, operators have indicated that they would indeed close the DCC in this manner (as was done in October and November 2013). In the BDCP Model, the DCC is not closed in this manner. The net result is that the BDCP Model overestimates outflow under such circumstances typically occurring in October.</p> <p>The overestimated outflow leads to incorrect conclusions regarding the effects of BDCP. For instance, an actual increase in fall outflow could be beneficial for the endangered fish species delta smelt (USFWS, 2008). Therefore, by overestimating outflow in October, the BDCP studies likely overestimate the benefit to delta smelt (Mount et al, 2013). Similarly, an actual increase in fall outflow would reduce salinity in the western Delta, which could be beneficial for in-Delta diverters; therefore, overestimating outflow in October artificially reduces salinity, incorrectly reducing the net impacts on in-Delta diverters.</p>	<p>The Delta Cross Channel assumptions in the CALSIM II model are consistent between the No Action Alternative and action alternatives in the EIR/EIS. As discussed in this comment, the criteria for Sacramento River flows at Rio Vista in October would become more critical with action alternatives that include north Delta intakes. Under the future operations, there would be a balance between operations of Delta Cross Channel closure to minimize effects on upstream reservoir storage and water quality criteria. Operations under proposed project (Alternative 4A) would increase Delta outflow due to Old and Middle River criteria which will improve water quality as compared to the No Action Alternative. It is recognized that assumptions were used for the impact analysis in the EIR/EIS based upon modeling analyses; and that the real-time operations would provide more flexibility than the CALSIM II monthly-model time step. However, the incremental differences that could occur under the No Action Alternative conditions and Alternative 4A would be similar with different CALSIM II model assumptions in the No Action Alternative conditions and Alternative 4A.</p>
1722	69	<p>[From ATT 1:]</p> <p>BDCP's "High Outflow Scenario" (HOS) is not sufficiently defined for analysis.</p> <p>The HOS requires additional water (Delta outflow) during certain periods in the spring. The BDCP Model places most of the responsibility for meeting this new additional outflow requirement on the SWP. However, the SWP may not actually be responsible for meeting this new additional outflow requirement. This is because the COA (Coordinated Operations</p>	<p>As described in Appendix 5A, Section B, of the EIR/EIS flows to meet the Delta outflow criteria based upon the State Water Resources Control Board Decision 1641 and the 2008 USFWS biological opinion are provided by a combination of SWP and CVP reservoir releases and limitations on Delta exports. Under Alternatives 4 H2 and 4 H4, water to support enhanced spring Delta outflow was provided by additional water releases from reductions in Delta exports and releases from Lake Oroville. The enhanced spring Delta outflow was considered to be met outside of the Coordinated Operations Agreement which defines sharing criteria between the SWP and CVP. This would result in reductions in SWP water contract deliveries as indicated in Appendix 5A, Section C, Modeling Results. Under Alternative 4A, the enhanced spring Delta outflow was only</p>

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		<p>Agreement), as it is currently being implemented, would require a water allocation adjustment that would keep the SWP whole. Where one project (CVP or SWP) releases water to meet a regulatory requirement, the COA requires a water balancing to ensure the burden does not fall inappropriately among the projects. The BDCP Model is misleading because it fails to adjust project operations, as required by the COA, to "pay back" the water "debt" to the SWP due to these additional Delta outflow requirements. Unless there is a significant revision to COA, the BDCP Model overstates the impacts of increased Delta outflow on the SWP and understates the effects on the CVP.</p> <p>Furthermore, after consulting with DWR and Reclamation project operators and managers, the Reviewers conclude that there is no apparent source of CVP or SWP water to satisfy both the increased Delta outflow requirements and pay back the COA "debt" to the SWP without substantially depleting upstream water storage. It appears, through recent public discussions regarding the HOS, that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water users. However, this approach is unrealistic because during most of the spring, when BDCP proposes that Delta outflow be increased, agricultural water users are not typically irrigating. This means that there is not sufficient transfer water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs. Releasing stored water to meet the increased Delta outflow requirements could potentially impact salmonids on the Sacramento and American River systems.</p>	<p>met by reduction in Delta exports.</p> <p>For additional information regarding modeling, please see Master Response 30.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1722	70	<p>[From ATT 1:]</p> <p>Simulated operation of BDCP's dual conveyance, coordinating proposed North Delta diversion (NDD) facilities with existing south Delta diversion (SDD) facilities, is inconsistent with the project description.</p> <p>The Draft BDCP and associated Draft EIR/EIS specify criteria for how much flow can be diverted by the new NDD facilities and specify when to preferentially use either the NDD facilities or the existing SDD facilities. However, the BDCP Model contains an artificial constraint that prevents the NDD facilities from taking water as described in the BDCP project description. In addition to affecting diversions from the NDD, this artificial constraint contains errors that affect the NAA (No Action Alternative) operation. This error has been fixed by DWR and Reclamation in more recent versions of the model; however, the error remains in the BDCP Model. Additionally, the BDCP Model does not reflect the Summer operations of the SDD that are described in the Draft EIR/EIS as a feature of the BDCP project intended to prevent water quality degradation in the south Delta. The net effect of these two errors is that the BDCP Model significantly underestimates the amount of water diverted from the NDD facilities and overestimates the amount of water diverted from the SDD.</p>	<p>Alternative 4 allows for the discretion and operations flexibility available for the Delta exports in the summer months. As noted in the Tables 5-7 through 5-9 of the Draft EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under Alternative 4 as a result of these export changes are analyzed in Chapter 8 of the EIR/EIS.</p> <p>Please see Master Response 30.</p>
1722	71	<p>[From ATT 1:]</p> <p>Independent Modeling output and analysis of BDCP Effects:</p> <p>Analysis for this effort was focused on BDCP Alt 4 with existing spring and Fall X2 requirements, which corresponds to "Alternative 4 H3" in the Decisions Tree. This modeling is performed without climate change, and includes refined operating criteria for the NDD (North Delta Diversion), CVP and SWP reservoirs, DCC (Delta Cross Channel) gate closures, and water supply allocations. This modeling includes all Project features that are included in</p>	<p>The EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the BDCP EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4.</p> <p>Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May</p>

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		<p>Alt 4 in the BDCP Model. The key Project features incorporated into BDCP are displayed in Figure 1 and summarized as:</p> <ul style="list-style-type: none"> * North Delta Diversion capacity of 9,000 cfs * NDD bypass flow requirements * 25,000 acres of additional tidal habitat * Notched Fremont Weir to allow more flow into Yolo Bypass * Additional positive Old & Middle River flow requirements * Removal of the San Joaquin River I/E (inflow to export) ratio (NMFS 2009) * Changed location for Emmaton water quality standard in SWRCB D-1641 * Additional Sacramento River flow requirement at Rio Vista <p>For the purpose of describing results of the Independent Modeling, the revised baseline scenario without climate change, originally termed No Action Alternative (NAA) in the BDCP Draft EIR/EIS, is referred to as the Future No Action (FNA) in this discussion. Additionally, in the Independent Modeling, Alternative 4 operational scenario H3 without climate change is simply referred to as "Alt 4". The results for the Independent Modeling are illustrated in the Technical Attachment. Key results are presented below.</p> <p>The change in conditions between FNA and Alt 4 is indicative of the effects of the BDCP on water supply and Delta flows. An effect of the BDCP is an anticipated increase in Delta export and corresponding decrease in Delta Outflow. Table 2 illustrates the estimated change in Delta Outflow by year type, amounting to an average annual 0.76 MAF. Table 3 illustrates the corresponding change in exports by year type, and also illustrates the estimated change in geographical source of export water. With the BDCP it is anticipated that exports from the South Delta (via through Delta conveyance) will decrease by 2.53 MAF. Exports derived from the North Delta (via the tunnels) will amount to 3.28 MAF.</p> <p>The Independent Modeling shows that implementation of the BDCP could shift a portion of the SWP exports from summer to winter and spring because the proposed NDD facilities can export water at times when the existing SDD facilities are constrained due to fishery concerns. As a result of this shift in timing, capacity is available at the SWP facilities during the summer months. The BDCP Model assumes that CVP could utilize the SWP facilities (Table 4) at any time when the CVP facilities are fully utilized; this sharing of diversion facilities is termed "joint point of diversion" or JPOD. Additional criteria to meet specific water quality and water level objectives are defined in response plans required by the State Water Board's water right decision D-1641. BDCP Model assumes that these additional criteria are met; the Independent Modeling continues this assumption without making any judgment as to whether the criteria would be met. An evaluation of this would require additional hydrodynamic modeling.</p> <p>The Independent Modeling shows higher average annual CVP carryover (end of September) storage than the NAA by about 28 TAF. During dryer years when upstream storage is lower there is an increase in carryover and during wetter years when storage is higher there are storage decreases (Table 5). Upstream SWP storage, Table 6, behaves in a similar manner as</p>	<p>– Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the BDCP EIR/EIS.</p> <p>The modeling for the BDCP and the BDCP EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models). In 2010, CALSIM II Existing Conditions and No Action Alternative models were updated in coordination with the fishery agencies to include the USFWS and NMFS biological opinions. This model formed the basis for the BDCP Alternative 1 model development in 2010. All the BDCP Alternatives modeled since then, including Alternative 4, were continued to be based on the 2010 models allowing comparability with the baselines. See Master Response 1 for discussion of environmental baselines and existing conditions.</p> <p>The models always evolve as the understanding of the operations improves and the assumptions are better defined. In August 2011, several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the BDCP Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS modelers. This update was performed to verify if the compiled model improvements have altered the incremental changes between the Alternative 1 and the Existing Conditions and No Action Alternative relative to the 2010 modeling. The findings from the 2011 update showed that the results remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability. It should be noted that the modeling used in the EIR/EIS must be used in a comparative manner and not to define absolute values.</p> <p>Reclamation, DWR and others have continued to improve the 2011 Existing Conditions and No Action Alternative models for other analyses. The majority of the changes included in the baseline model presented by MBK at the January 2014 Independent Science Board (ISB) meeting, were part of the 2011 modeling. Some of these changes cannot be part of the project baselines because of when the Notice of Preparation and Notice of Intent for the EIR/EIS were issued. When Alternative 4 was modeled using the 2013 No Action Alternative model without these changes, the incremental changes in the operational results for Alternative 4 compared to the No Action Alternative were similar to the Alternative 4 results. In the presentation to the ISB, MBK's modeling did not include climate change and sea level rise effects, and were compared to the BDCP Early Long-Term (ELT) results, which included climate change and sea level rise effects.</p> <p>Modeling is continuously evolving as the operational understanding improves. However, in a planning study such as the BDCP, models are generally frozen to allow consistency and comparability in the effects analysis. BDCP results were continuously verified using the most up to date Existing Conditions and No Action Alternative models available (e.g. 2011 updates and 2013 updated baseline). MBK's Alternative 4 modeling included several changes to the discretionary operations, which may be refined as the project elements are further operationalized. For a planning study, the implementation used in the BDCP modeling provides a fair representation of the proposed operations criteria under the Alternatives, and is consistent across all the Alternatives.</p> <p>MBK's independent modeling of the No Action Alternative included different assumptions than the BDCP EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results</p>

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		<p>CVP storage, there are decreases in wetter years and increased in dryer years.</p> <p>CVP San Luis Reservoir fills in about 40% of years in Alt 4 compared to about 20% in the FNA. CVP San Luis reaches dead pool in about 25% of years in both the FNA and Alt 4. SWP San Luis Reservoir fills in about 43% of years in Alt 4 compared to about 18% in the FNA. SWP San Luis reaches dead pool in about 25% of years in Alt 4 and about 30% of years in the FNA.</p>	<p>from the BDCP EIR/EIS.</p> <p>With regards to modeling, please see Master Response 30. With regards to baseline, please see Master Response 1.</p>
1722	72	[ATT 1: att2 -- Figure 1. Map of Delta with location of key BDCP facilities and regulatory changes]	This comment refers to a map of proposed BDCP facilities in the attachment. Please see responses to comments above.
1722	73	[ATT 1: att3 -- Table 2. Change in Delta outflow due to the BDCP (Alt 4 minus Future No Action) (Million Acre-Feet)]	This comment refers to a table in the attachment that presents climate change scenarios. Please see responses to comments above.
1722	74	[ATT 1: att4 -- Table 3. Change in quantity of water exported due to the BDCP (Alt 4 minus Future No Action) (Million Acre-Feet)]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	75	[ATT 1: att5 -- Table 4. Change in quantity of CVP water exported by SWP facilities (Alt 4 minus Future No Action) (Thousand Acre-Feet)]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	76	[ATT 1: att6 -- Table 5. Change in CVP upstream carryover storage (Alt 4 minus Future No Action) (Thousand Acre-Feet)]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	77	[ATT 1: att7 -- Table 6. Change in SWP upstream carryover storage (Alt 4 minus Future No Action) (Thousand Acre-Feet)]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	78	<p>[From ATT 1:]</p> <p>Based on the Independent Modeling, the amount of water exported (diverted from the Delta) may be approximately 200 thousand acre-feet (TAF) per year higher than the amount disclosed in the Draft EIR/EIS. This total represents:</p> <ul style="list-style-type: none"> - approximately 40 TAF/yr more water diverted and delivered to the SWP south of Delta contractors, and - approximately 160 TAF/yr more water diverted and delivered to the CVP south of Delta contractors. 	<p>The BDCP EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the BDCP EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the BDCP EIR/EIS.</p> <p>As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the long-term average Delta exports under Alternative 4 remain similar or increase compared to the No Action Alternative. With respect to the reference to the impact designation in the Draft BDCP EIR/EIS for WS-2, it was determined that no impact designations would be developed for Water Supply changes because the true impacts occur under other environmental resources. For example, increased surface water deliveries under Water Supply is assumed to result in less groundwater pumping and less effects on groundwater conditions.</p> <p>Further, MBK's modeling compares the projected Delta exports under the No Action Alternative included in the BDCP EIR/EIS, which considers the effects of climate change and sea level rise, to a model run of No Action Alternative that does not include climate change and sea level rise effects, and includes different operational assumptions than the EIR/EIS. Please see Master Response 30.</p>

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			With regards to greenhouse gas emissions and climate change, please see Master Response 19.
1722	79	<p>[From ATT 1:]</p> <p>The BDCP Model estimates that, under the NAA ELT (No Action Alternative-Early Long Term) (without the BDCP), total average annual exports for CVP and SWP combined are estimated to be 4.73 million acre feet (MAF) and in the Independent Modeling FNA combined exports are 5.61 MAF. The BDCP Model indicates an increase in exports of approximately 540 TAF and the Independent Modeling shows an increase of approximately 750 TAF in Alt 4.</p>	<p>Please see response to Comment 1722-78.</p> <p>With regards to modeling, please see Master Response 30.</p>
1722	80	<p>[From ATT 1:]</p> <p>The Independent Modeling suggests that Delta outflow would decrease by approximately 200 TAF/yr compared to the amount indicated in the Draft EIR/EIS.</p> <p>- This lesser amount of Delta outflow has the potential to cause greater water quality and supply impacts for in-Delta beneficial uses and additional adverse effects on species. To determine the potential effects of the reduced amount of outflow, additional modeling is needed using tools such as DSM2.</p>	<p>The EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the EIR/EIS.</p> <p>The aggregate effect of the changed assumptions under MBK's modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the EIR/EIS.</p> <p>Further, as noted in the Tables 5-7 through 5-9 of the EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting Delta outflow will be different under Alternative 4 compared to the No Action Alternative. The effects of changes in Delta outflow on water quality, fisheries and other environmental resources under Alternative 4 are analyzed in other resource Chapters of the EIR/EIS.</p> <p>MBK's modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to EIR/EIS modeling. As noted in the Tables 5-7 through 5-9 of the EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under all alternatives as a result of these export changes are analyzed in Chapter 8 of the EIR/EIS.</p> <p>With regards to water quality, please see Master Response 14. With regards to modeling, please see Master Response 30.</p>
1722	81	<p>[From ATT 1:]</p> <p>The BDCP Model does not accurately reflect the location of the diversions that the SWP and CVP will make from the Delta.</p> <p>- When the errors in the model are corrected, it reveals that the North Delta intakes could divert approximately 680 TAF/yr more than what was disclosed in the BDCP Draft EIR/EIS, and</p> <p>- the amount of water diverted at the existing South Delta facilities would be approximately 460 TAF/yr less than what is projected in the BDCP Draft EIR/EIS.</p>	<p>It appears that this comment was based on the MBK January 2014 review of BDCP modeling. EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4.</p> <p>Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results</p>

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			<p>from the BDCP EIR/EIS.</p> <p>The aggregate effect of the changed assumptions under MBK’s modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the BDCP EIR/EIS.</p> <p>Further, as noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting Delta outflow will be different under Alternative 4 compared to the No Action Alternative. The effects of changes in Delta outflow on water quality, fisheries and other environmental resources under Alternative 4 are analyzed in other resource Chapters of the EIR/EIS.</p> <p>MBK’s modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to BDCP EIR/EIS modeling. As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under Alternative 4 as a result of these export changes are analyzed in Chapter 8 of the EIR/EIS.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	82	<p>[From ATT 1:]</p> <p>Hydrologic modeling of BDCP alternatives using CalSim II has not been refined enough to understand how BDCP may affect CVP and SWP operations and changes in Delta flow dynamics. Better defined operating criteria for project alternatives is needed along with adequate modeling rules to analyze how BDCP may affect water operations. Without a clear understanding of how BDCP may change operations, affects analysis based on this modeling may not produce reliable results and should be revised as improved modeling is developed.</p>	<p>The EIR/EIS modeling of the action alternatives was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK’s independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK’s independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. The aggregate effect of the changed assumptions under MBK’s modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the EIR/EIS. MBK’s modeling compares the projected Delta exports under the No Action Alternative included in the EIR/EIS, which considers the effects of climate change and sea level rise, to a model run of No Action Alternative that does not include climate change and sea level rise effects, and includes different operational assumptions than the EIR/EIS. MBK’s modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to EIR/EIS modeling. It should be noted that the EIR/EIS modeling is used in a comparative manner to compare conditions under the Existing Conditions and the No Action Alternative to conditions under the action alternatives in order to compare the alternatives. The results cannot be used in a predictive manner to predict absolute values.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	83	<p>[ATT 2: Review of Bay Delta Conservation Program Modeling, by MBK Engineers and Daniel B. Steiner (Consulting Engineer), Technical Appendix to Attachment 1. See also BDCP1633-ATT 2, BDCP1563-ATT 38.2, BDCP1597-ATT 6.2, and BDCP1674-ATT 3.2.]</p>	<p>This comment describes an attachment to the comment letter; see responses to comments in letter 1722.</p>
1722	84	<p>[ATT 2: att1 -- Table 1. Scenarios used to evaluate climate change]</p>	<p>This comment refers to a table in the attachment that presents climate change scenarios. Please see responses to comments above.</p>
1722	85	<p>[From ATT 2:]</p> <p>Inflow and Reservoir Storage in the Sacramento River Basin:</p>	<p>As described in Chapter 5, Water Supply, the EIR/EIS analyses assume continued implementation of regulatory requirements in accordance with the requirements under the CEQA definition of Existing Conditions and under the NEPA definition of the No Action Alternative. It is recognized that operations of the SWP and CVP reservoirs and other reservoirs probably will be modified in the future in response to</p>

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		<p>The significance of changed hydrology between the three without project baselines is illustrated in Figure 1 below. The figure illustrates the projected combined inflow of Trinity, Shasta, Oroville, and Folsom Reservoirs under the three NAA (No Action Alternative) baselines. Numerous modeling projections for climate change have been developed, and in this BDCP group of Scenarios Trinity, Shasta, and Oroville inflow are projected to increase overall, but with a significant shift from spring runoff to winter runoff and increases in wetter years with decreases in dryer years. Folsom Reservoir inflow is projected to remain about the same at the time of the NAA-ELT (No Action Alternative-Early Long Term) Scenario but decreases by the time of the NAA-LLT (No Action Alternative-Late Long Term) Scenario. The spring to winter shift in runoff is also projected for Folsom Reservoir inflow.</p> <p>If climate change resulted in such drastic inflow changes, there is argument that certain underlying operating criteria such as instream flow requirements and flood control diagrams would require change in recognition of the changed hydrology. Regarding current environmental flow requirements carried into the NAA Scenarios, we question an assumed operation that continues to attempt to meet temperature targets when flow releases are unlikely to meet the target and thus a sustainable operation plan is not possible. For example, the CVP and SWP are unlikely to draw reservoirs to dead pool as often as the models depict. The NAA-ELT and NAA-LLT model Scenarios show project reservoirs going to dead pool in 10% of years; such operation would result in cutting upstream urban area deliveries below what is needed for public health and safety in 10% of years and would lead to water temperature conditions that would likely not achieve the assumed objectives. Again in short, the Scenarios that include climate change do not provide a reasonable underlying CVP/SWP operation with a changed hydrology from which to impose a Project upon to understand how BDCP Alternatives will affect the water system and water users.</p> <p>In our opinion, the CalSim II depicted operations that incorporate climate change are not reasonably foreseeable and do not represent a likely future operation of the CVP/SWP. Although an argument is typically made that these study baselines will be used in a comparison analysis with Project Alternatives tiering from these baselines, we believe that the depicted operations do not represent credible CVP/SWP operations and we have no confidence in the results and they are inappropriate as the foundation of a Project Alternative. As such, although the modeling approach may provide a relative comparison between equal foundational operations, we are apprehensive to place much confidence in the computed differences shown between the NAA and Project Alternative Scenarios.</p>	<p>climate change and other water resources operations. However, it would be speculative to develop changes in operations under the No Action Alternative or Cumulative Impact Analysis; and these changes are not consistent with the Project Objectives and Purpose and Need statement for the action alternatives. Following adoption of changes to the operational or regulatory requirements by the State and federal governments, DWR and Reclamation would need to determine if changes in the SWP and CVP would be necessary. Future changes in reservoir operations would require separate engineering environmental analyses under CEQA and NEPA, and revised reservoir operations permits which could affect SWP and CVP operations.</p> <p>For additional information regarding baseline, please see Master Response 1. For additional information regarding purpose and need, please see Master Response 3. For additional information regarding cumulative impacts, please see Master Response 9. For additional information regarding greenhouse gas emissions and climate change, please see Master Response 19. For additional information regarding upstream reservoir effects, please see Master Response 25.</p>
1722	86	[ATT 2: att2 -- Figure 1. Projected Inflow to Trinity, Shasta, Oroville, and Folsom Reservoirs -- NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	87	<p>[From ATT 2:]</p> <p>Carryover Storage in the Sacramento River Basin:</p> <p>For upstream CVP and SWP reservoirs the assumed shift of inflows due to climate change (Figure 1, see ATT 2: att2) along with a continuing need to satisfy exports demands significantly affects carryover storage. The CVP and SWP simply cannot satisfy water demands and regulatory criteria imposed on them in the NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term) modeling scenarios.</p> <p>Figure 2 (see ATT 2: att3) illustrates the typical change in carryover storage as shown for</p>	<p>The CALSIM II model includes assumptions for long-term conditions of the SWP and CVP over an 82-year long hydrologic period with extended wet periods and dry/critical dry periods. The evaluation is a comparative analysis to determine the incremental differences between conditions under the action alternatives and conditions under the Existing Conditions and the No Action Alternative. The analyses were not conducted to identify specific values or to respond to short-term emergency situations, such as the ongoing drought. Separate engineering and environmental studies have been and will continue to be prepared when water quality criteria and other regulations are modified in emergencies. The No Action Alternative and all of the action alternatives include climate change and sea level rise assumptions. These changes would result in SWP and CVP operational conditions that generally would not occur because operators of the projects would make real-time decisions. For example, the “dead pool” conditions presented in the CALSIM II model results in the EIR/EIS are developed from calculated monthly average</p>

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		<p>Trinity, Shasta, Oroville, and Folsom Reservoirs. The relatively high frequency (approximately 10% of time) of minimum storage occurring at CVP reservoirs illustrates our questioning of credible operations in the studies.</p>	<p>reservoir volumes. Because the model only calculates and reports SWP and CVP water operations at an average monthly basis, the model cannot simulate changes that occur on a weekly basis by water users and SWP and CVP operations. In addition, the model cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes average operating criteria for all dry periods, and does not reflect specific changes. The dead pool conditions occur in the No Action Alternative as compared to the Existing Conditions because the model includes changes in precipitation without making changes in water diversion patterns.</p> <p>As described in Chapter 5, Water Supply, in the EIR/EIS, the analyses assume continued implementation of existing regulatory reservoir operations. Changes in the regulatory requirements would only occur following detailed analyses, including project-specific CEQA and NEPA analyses and ESA and CESA analyses. Following adoption of changes to the regulatory requirements by the State and federal governments, DWR and Reclamation would need to determine if changes in the SWP and CVP would be necessary. These changes are considered to be speculative and are not included in the No Action Alternative or in the Cumulative Impact Analysis.</p> <p>For additional information regarding baseline, please see Master Response 1. For additional information regarding cumulative impacts, please see Master Response 9. For additional information regarding upstream reservoir effects, please see Master Response 25.</p>
1722	88	<p>[ATT 2: att3 -- Figure 2. Projected Shasta Reservoir Carryover Storage, NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]</p>	<p>This comment refers to a figure in the attachment that presents results. Please see responses to comments above.</p>
1722	89	<p>[From ATT 2:]</p> <p>Inflow and Carryover Storage in the San Joaquin River Basin:</p> <p>San Joaquin Valley reservoirs are depicted with an overall decrease in annual runoff with some shifting of runoff from spring to winter, but mostly just decreases in spring runoff due to a decline in snowmelt runoff during late spring. [Footnote 5: BDCP Appendix 5A.2] Figure 3 (see ATT 2: att4) illustrates the assumed effects of climate change upon inflow to Millerton Lake.</p> <p>The hydrology differences imposed in the NAA (No Action Alternative) Scenarios of the Friant Division are described above, and its appropriateness may be subject to additional debate and Alternative assumptions. However, our review found that implementation of Millerton Reservoir inflow as affected by climate change was improperly performed.</p> <p>Inflow to Millerton Reservoir in this version of CalSim is input in three separate time series for purposes of depicting the hydrology of potential upper basin reservoirs. Climate change hydrology was inconsistently incorporated at Millerton Reservoir and misapplied to the water supply and flood control operations. The result is an unrealistic operation for river releases and canal diversions. Figure 3 illustrates the projected ELT (Early Long Term) and LLT (Late Long Term) changes in Millerton Reservoir inflow incorporated in these studies. On face value of the input data, regardless of Friant Dam river release assumptions the effect of climate change at Millerton Lake will affect water deliveries.</p> <p>Evidence of the inconsistent inflow problem is shown in the result for the comparison of carryover storage of Millerton Reservoir under the NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term), and NAA-LLT (No Action Alternative-Late Long Term) Scenarios (Figure 4). Carryover storage is higher in the ELT and LLT Scenarios due to</p>	<p>The climate change assumptions were consistent across all the EIR/EIS alternatives including the No Action Alternative. As shown in the EIR/EIS, San Joaquin River operations remain unchanged under the action alternatives compared to the No Action Alternative. The error in the Millerton Lake climate-modified inflow was found to only affect Millerton Lake storage and flows in the San Joaquin River, and it had only minor impacts to the Delta and Sacramento River operations.</p> <p>The portion of the comment related to increased frequency of reductions in deliveries based upon the Shasta Index is consistent with information presented in Appendix 5A, Section C of the EIR/EIS.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p> <p>For additional information regarding greenhouse gas emissions and climate change, please see Master Response 19.</p>

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		<p>climate change effects to inflow incorporated in reservoir operations but not in the computation of water supply deliveries. Thus, water deliveries are suppressed and the reservoir ends the year with greater storage.</p> <p>CVP Water Service Contractor's water allocations are based on available CVP supplies, Figure 5 (see ATT 2: att7) contains exceedance probability plots of deliveries and allocation percentages to these contractors. Table 2 (see ATT 2: att6) contains average annual allocation to these CVP Water Service Contractors. Water supplies to these contractors decrease in the ELT and LLT relative to NAA Conditions.</p> <p>CVP Sacramento River Settlement, San Joaquin River Exchange, and Refuge deliveries are based on Shasta Criteria and are 100% in most years and 75% in "Shasta critical" years. [Footnote 6: A "Shasta critical" year is determined when the forecasted full natural inflow into Shasta Lake is equal to or less than 3.2 million acre-feet.] Figure 6 (see ATT 2: att8) contains exceedance probability charts for annual water deliveries to CVP contractors whose allocations are based on Shasta Criteria. In the NAA-ELT and NAA-LLT modeling scenarios, the Sacramento River Settlement and Refuge deliveries are reduced due to water shortages that occur more often under the climate change assumptions.</p>	
1722	90	[ATT 2: att4 -- Figure 3. Projected Inflow to Millerton Lake -- NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	91	[ATT 2: att5 -- Figure 4. Millerton Reservoir Carryover Storage, NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term) Scenarios]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	92	[ATT 2: att6 -- Table 2. CVP Water Service Contractor Allocation Summary]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	93	<p>[From ATT 2:]</p> <p>SWP Water Supply:</p> <p>Corresponding with the CVP operation is the projected operation of the SWP under No Action Conditions. These illustrations are shown to provide a comparison to SWP storage and exports, particularly during drought. A comparison of SWP exports to CVP SOD (South of Delta) deliveries shows that each project exports about the same amount of water during drought.</p> <p>Average annual SWP Table A water supply allocations are 62% for NAA (No Action Alternative), 61% for NAA-ELT (No Action Alternative-Early Long Term), and 57% for NAA-LLT (No Action Alternative-Late Long Term). Figure 7 (see ATT 2: att9) contains an exceedance probability plot summary of SWP deliveries. SWP North of Delta deliveries to the Feather River Service Area in both the ELT (Early Long Term) and LLT (Late Long Term) are less than NAA during about 10% of the time.</p>	<p>The comment is consistent with model results presented in the Draft EIR/EIS.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>With regards to modeling, please see Master Response 30.</p>
1722	94	[ATT 2: att7 -- Figure 5. CVP Water Service Contractor Delivery Summary]	This comment refers to a figure in the attachment that presents results Please see responses to comments above.
1722	95	[ATT 2: att8 -- Figure 6. CVP Contractor Delivery Summary for Contractors with Shasta]	This comment refers to a figure in the attachment that presents results. Please see responses to

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		Criteria Allocations]	comments above.
1722	96	[ATT 2: att9 -- Figure 7. SWP Delta Delivery Summary]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	97	[From ATT 2:] CVP/SWP Exports: Exports of the CVP and SWP have been projected to change due to a combination of climate change effects on water availability (primary effect), flow requirements for salinity control (sea level rise), additional in-basin water demands, and to a small extent greater export potential (DMC-CA (Delta Mendota Canal-California Aqueduct) intertie). Figure 8 (see ATT 2: att10) illustrates the simulation of CVP exports and combined CVP/SWP exports under NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term) Scenarios. Under NAA average annual CVP exports are about 2.24 MAF (2.18 at Jones PP) and are about 100 TAF less in the NAA-ELT Scenario and 230 TAF less in the NAA-LLT. Annual average SWP exports are about 2.61 MAF in the NAA and are 68 TAF less in the NAA-ELT and 212 TAF less in the NAA-LLT. Annual average combined CVP/SWP exports are about 4.9 MAF in the NAA modeling (Figure 9, see ATT 2: att11) and about 170 TAF and 460 TAF less in the NAA-ELT and NAA-LLT respectively.	The comment is consistent with model results presented in the Draft EIR/EIS. This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.
1722	98	[ATT 2: att10 -- Figure 8. CVP Exports at Jones Pumping Plant, NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	99	[ATT 2: att11 -- Figure 9. Total CVP/SWP Exports, NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	100	[From ATT 2:] Joint Point of Diversion: The NAA Alternatives do not make use of Joint Point of Diversion (JPOD), however CVP water is pumped at Banks to satisfy the Cross Valley Canal (CVC) contracts. Figure 10 shows annual Banks wheeling for CVC for the NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term).	The comment is consistent with model results presented in the Draft EIR/EIS. As described in Appendix 5A, Section B of the EIR/EIS, the CALSIM II assumptions only considered the Cross Valley Canal contracts under implementation of the Joint Point of Diversion. This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.
1722	101	[ATT 2: att12 -- Figure 10. Cross Valley Canal Wheeling at Banks]	This comment refers to a figure in the attachment that presents information. Please see responses to comments above.
1722	102	[From ATT 2:] San Luis Reservoir Operations: Modeling protocols will use San Luis Reservoir to store water when available and provide supply as exports are constrained by hydrology or regulatory constraints. Figure 11 (see ATT 2: att13) illustrates the projected operation of San Luis Reservoir under the NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term) Scenarios. The annual maximum storage shows that the ability to fill San Luis Reservoir is somewhat similar for NAA and NAA-ELT but with less ability to fill	The comment is consistent with model results presented in the Draft EIR/EIS. The San Luis Reservoir rule curve is an input to CALSIM II which provides a target storage each month that is dependent on the South-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgement of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta exports, different San Luis Reservoir rule curves can result in differences in upstream reservoir release patterns, and Delta exports. Assumed San Luis Reservoir rule curve could differ depending on the available export capacity during winter and spring months, and the need to protect upstream carryover storage in the fall months. For the No Action Alternative simulation, the San Luis Reservoir rule curve is managed to

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		<p>in the NAA-LLT. The frequency of a low annual low point of San Luis Reservoir is exacerbated in the NAA-LLT Scenario. In all the Scenarios, San Luis Reservoir is heavily exercised. As currently projected, San Luis Reservoir will only fill as the result of very favorable hydrologic conditions including the availability of spill water from Friant or the Kings River system that offsets DMC (Delta Mendota Canal) water demands at the Mendota Pool.</p>	<p>maximize filling during summer and fall months when the Delta export pumping is less constrained to minimize situations in which south-of-Delta shortages may occur due to lack of storage or exports. Under the EIR/EIS proposed project and other action alternatives with the north Delta diversion, the CALSIM II San Luis Reservoir rule curve was modified in expectation that the new north Delta diversion facility would allow capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. Additional modifications to the rule curve were included to preserve upstream carryover storage conditions while minimizing south-of-Delta shortages in the fall months. Under Alternative 4A, the San Luis Reservoir storage conditions are also affected by the restrictive south Delta export operations in October.</p> <p>It is recognized that future projects could change the San Luis Reservoir rule curve. However, these future actions would require engineering and environmental analyses that would consider the potential changes to the existing and planned infrastructure at the time of those studies. Changes in these assumptions would be speculative and are not included in the No Action Alternative in this EIR/EIS. Changes in these assumptions also are not necessarily consistent with the project objectives or purpose and need for the project proponents, and are not included in the action alternatives.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	103	<p>[ATT 2: att13 -- Figure 11. San Luis Reservoir Storage -- NAA (No Action Alternative), NAA-ELT (No Action Alternative-Early Long Term) and NAA-LLT (No Action Alternative-Late Long Term)]</p>	<p>This comment refers to a figure in the attachment that presents results.</p>
1722	104	<p>[From ATT 2:]</p> <p>Sacramento River Temperature:</p> <p>CalSim II results, along with meteorological data, are used in temperature models that simulate reservoir temperature and river temperature. The BDCP modeling provided by DWR for review included the Sacramento River temperature model and results for the No Action and Alternatives. Each BDCP Alternative used temperature target criteria for the upper Sacramento River as is used for the Existing Conditions modeling scenario. Equilibrium temperatures, a calculated model input that approximately depicts the effective air temperature for interaction with water temperature in the model, between Shasta and Gerber are increased by an annual average of 1.6°F for the ELT (Early Long Term) Scenarios and by 3.3°F for LLT (Late Long Term) Scenarios. Figure 12 (see ATT 2: att14) contains monthly exceedance probability charts of temperature at Bend Bridge in the Sacramento River for April through October for the Existing Conditions and NAA-ELT (No Action Alternative-Early Long Term) Scenarios. There is about a 1 degree increase in average monthly temperature for the April through October period. Figure 13 (see ATT 2: att15) contains similar information as Figure 12, but compares modeling results for the NAA-LLT (No Action Alternative-Late Long Term) and Existing Conditions Scenarios, there is often a 2°F increase in the NAA-LLT relative to Existing Conditions.</p> <p>The increase in equilibrium temperatures combined with decreases in storage would lead to water temperature conditions that would likely not achieve the assumed objectives. Figure</p>	<p>The comment is consistent with model results presented in the Draft EIR/EIS. The ability to meet water temperature criteria occur more frequently under the No Action Alternative as compared to the Existing Conditions due to climate change and future water demands that would occur with or without the project. In the drier years when these conditions occur, water primarily released for water rights holders in accordance with water rights issued by the State Water Resources Control Board.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>

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		12 and Figure 13 illustrate an increase in the probability that a water temperature target of 56°F would be exceeded at Bend Bridge under both the NAA-ELT and NAA-LLT Scenarios. The probability of exceedance increases approximately 5% to 20% depending on the month for the NAA-ELT Scenario and approximately 10% to 40% for the NAA-LLT Scenario.	
1722	105	[ATT 2: att14 -- Figure 12. Temperature Exceedance Sacramento River at Bend Bridge Existing, No Action Alternative, ELT (Early Long Term)]	This comment refers to a figure in the attachment that presents results Please see responses to comments above.
1722	106	[ATT 2: att15 -- Figure 13. Temperature Exceedance Sacramento River at Bend Bridge Existing, No Action Alternative, LLT (Late Long Term)]	This comment refers to a figure in the attachment that presents results Please see responses to comments above.
1722	107	[From ATT 2:] Conclusions regarding Climate Change Assumptions and Implementation: In examining the possible effects of climate change, it is not appropriate to assume that current project operations will remain static and not respond to climate change. The BDCP's simplistic approach of assuming a linear operation of the CVP and SWP produces results that are not useful for dealing with the complex problem of climate change because it does not reflect the way in which the CVP and the SWP would actually operate whether or not the BDCP is implemented. Reviewers recommend a sensitivity analysis be conducted to develop a better understanding of the range of possible responses to climate change by the CVP and SWP, and the regulatory structures that dictate certain project operations. Including climate change, without adaptation measures, results in insufficient water needed to meet all regulatory objectives and user demands. For example, the BDCP Model results that include climate change indicate that during droughts, water in reservoirs is reduced to the minimum capacity possible. Reservoirs have not been operated like this in the past during extreme droughts and the current drought also provides evidence that adaptation measures are called for long in advanced to avoid draining the reservoirs. In this aspect, the BDCP Model simply does not reflect a real future condition. Foreseeable adaptations that the CVP and SWP could make in response to climate change include: (1) updating operational rules regarding water releases for flood protection; (2) during severe droughts, emergency drought declarations could call for mandatory conservation; and (3) if droughts become more frequent, the CVP and SWP would likely revisit the rules by which they allocate water during shortages and operate more conservatively in wetter years. The modifications to CVP and SWP operations made during the winter and spring of 2014 in response to the drought supports the likelihood of future adaptations. The BDCP Model is, however, useful in that it reveals that difficult decisions must be made in response to climate change. But, in the absence of making those decisions, the BDCP Model results themselves are not informative, particularly during drought conditions. With future conditions projected to be so dire without the BDCP, the effects of the BDCP appear positive simply because it appears that conditions cannot get any worse (i.e., storage cannot be reduced below its minimum level). However, in reality, the future condition will not be as depicted in the BDCP Model. The Reviewers recommend that Reclamation and DWR develop more realistic operating rules for the hydrologic conditions expected over the next half-century and incorporate those operating rules into the any CalSim II Model that includes climate change.	The "dead pool" conditions presented in the CALSIM II model results in the EIR/EIS are developed from calculated monthly average reservoir volumes. Because the model only calculates and reports SWP and CVP water operations at an average monthly basis, the model cannot simulate changes that occur on a weekly basis by water users and SWP and CVP operations. In addition, the model cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes average operating criteria for all dry periods, and does not reflect specific changes. The dead pool conditions occur in the No Action Alternative as compared to the Existing Conditions because the model includes changes in precipitation without making changes in water diversion patterns. The EIR/EIS analysis considers changes between the frequency of dead pool conditions under the alternatives and the No Action Alternative (both with the same climate change assumptions) to determine if the changes are adverse or beneficial. It is recognized that operations of the SWP and CVP reservoirs and other reservoirs probably will be modified in the future in response to climate change and other water resources operations. However, it would be speculative to develop hypothetical changes in operations under the No Action Alternative or Cumulative Impact Analysis; and these changes are not consistent with the Project Objectives and Purpose and Need statement for the action alternatives. Future changes in reservoir operations would require separate environmental analyses under CEQA and NEPA, and revised reservoir operations permits which could affect SWP and CVP operations. For additional information regarding upstream reservoir effects, please see Master Response 25.
1722	108	[From ATT 2:]	It is recognized that operations of the SWP and CVP reservoirs and other reservoirs probably will be modified in the future in response to climate change and other water resources operations. However, it

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		<p>Description of the BDCP Project:</p> <p>At the time of review, this Alternative was coined Alt 4 and represented a dual conveyance facility. The two DWR analyses reviewed were identified as:</p> <p>* Alt 4 (dual conveyance) -- ELT (Early Long Term)</p> <p>The same system demands and facilities as described in the NAA-ELT (No Action Alternative-Early Long Term) with the following primary changes: three proposed North Delta Diversion (NDD) intakes of 3,000 cfs each; NDD bypass flow requirements; additional positive OMR (Old & Middle River) flow requirements and elimination of the San Joaquin River I/E ratio and the export restrictions during VAMP; modification to the Freemont Weir to allow additional seasonal inundation and fish passage; modified Delta outflow requirements in the spring and/or fall (defined in the Decision Tree discussed below); movement of the Emmatton salinity standard; redefinition of the EI ratio; and removal of current permit limitations for the south Delta export facilities. Set within the ELT environment.</p> <p>* Alt 4 (dual conveyance) -- LLT (Late Long Term)</p> <p>The same as the previous Scenario except established in the LLT environment.</p> <p>The BDCP contemplates a dual conveyance system that would move water through the Delta's interior or around the Delta through an isolated conveyance facility. The BDCP CalSim II files contained a set of studies evaluating the projected operation of a specific version of such a facility. The Alternative was imposed on two baselines: the NAA-ELT scenario and the NAA-LLT (No Action Alternative-Late Long Term) scenario.</p> <p>The changes (benefits or impacts) of the operation due to Alt 4 are highly dependent upon the assumed operation of not only the BDCP facilities and the changed regulatory requirements associated with those facilities, but also by the assumed integrated operation of the CVP and SWP facilities. The modeling of the NAA (No Action Alternative) Scenarios introduced a significant change in operating protocols suggested primarily for reaction to climate change. We consider the extent of the reaction not necessarily representing a likely outcome, and thus have little confidence that the NAA baselines are a "best" (or even valid) representation of a baseline from which to compare an action Alternative. However, a comparison review of the Alternative to the NAA baselines illuminates operational issues in the BDCP modeling and provides insight as to where benefits or impacts may occur as additional studies are provided.</p>	<p>would be speculative to develop changes in operations under the No Action Alternative or Cumulative Impact Analysis; and these changes are not consistent with the Project Objectives and Purpose and Need statement for the action alternatives. Future changes in reservoir operations would require separate engineering environmental analyses under CEQA and NEPA, and revised reservoir operations permits which could affect SWP and CVP operations.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p> <p>For additional information regarding baseline, please see Master Response 1. For additional information regarding purpose and need, please see Master Response 3. For additional information regarding cumulative impacts, please see Master Response 9. For additional information regarding water quality, please see Master Response 14. For additional information regarding greenhouse gas emissions and climate change, please see Master Response 19. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30. For additional information regarding decision tree, please see Master Response 44.</p>
1722	109	<p>[From ATT 2:]</p> <p>BDCP's Alternative 4 has four possible sets of operational criteria, termed the Decision Tree, that differ based on the "X2" standards [Footnote 7: X2 is a salinity standard that requires outflows sufficient to attain a certain level of salinity at designated locations in the Delta at certain times of year.] that they contemplate:</p> <p>* Low Outflow Scenario (LOS), otherwise known as operational scenario H1, assumes existing spring X2 standard and the removal of the existing fall X2 standard;</p> <p>* High Outflow Scenario (HOS), otherwise known as H4, contemplates the existing fall X2 standard and providing additional outflow during the spring;</p>	<p>Under Alternative 4 H4, the SWP would provide the additional Delta outflow outside of Coordinated Operations Agreement (as described in Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions in the EIR/EIS). This would result in reductions in SWP water contract deliveries as indicated in Appendix 5A, Section C, Modeling Results.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting</p>

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		<p>* Evaluated Starting Operations (ESO), otherwise known as H3, assumes continuation of the existing X2 spring and fall standards;</p> <p>* Enhanced spring outflow only (not evaluated in the December 2013 Draft BDCP), scenario H2, assumes additional spring outflow and no fall X2 standards.</p> <p>While it is not entirely clear how the Decision Tree would work in practice, the general concept is that the prior to operation of the new facility, implementing authorities would select the appropriate Scenario (from amongst the four choices) based on their evaluation of targeted research and studies to be conducted during planning and construction of the facility.</p> <p>For our analysis, we reviewed the HOS (or H4) scenario because the BDCP [Footnote 8: Draft BDCP, Chapter 3, Section 3.4.1.4.4] indicates that the initial permit will include HOS operations that may be later modified at the conclusion of the targeted research studies. The HOS includes the existing fall X2 requirements but adds additional outflow requirements in the spring. We reviewed the model code and discussed the operations with DWR and Reclamation, who acknowledged that although the SWP was bearing the majority of the responsibility for meeting the additional spring outflow in the modeling, the responsibility would need to be shared with the CVP. [Footnote 9: August 7, 2013 meeting with DWR, Reclamation, and CH2M HILL] In subsequent discussions, DWR and Reclamation have suggested that the additional water may be purchased from other water users. However, the actual source of water for the additional outflow has not been defined. Since the BDCP modeling assumes that SWP bears the majority of the responsibility for meeting the additional outflow, yet this is not how the project will be operated in reality, our review of the BDCP modeling results for HOS is limited to the evaluation of how the SWP reservoir releases on the Feather River translate into changes in Delta outflow and exports.</p>	<p>CEQA and NEPA’s requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p> <p>For additional information regarding water quality, please see Master Response 14. For additional information regarding modeling, please see Master Response 30. For additional information regarding decision tree, please see Master Response 44.</p>
1722	110	<p>[From ATT 2:]</p> <p>High Outflow Scenario (HOS or H4) Results:</p> <p>In Alt 4-ELT (Early Long Term) H4 Feather River flows during wetter years are increased more than 3,000 cfs in April and May and then decreased in most year types during July and August, while September flow is only decreased in wetter years. Figure 14 (see ATT 2: att16) shows average monthly change in Feather River flow by water year type. Accompanying the changes in Feather River flow are changes in Oroville Reservoir storage levels, Figure 15 (see ATT 2: att17) contains average monthly changes in Oroville storage. Alt4-ELT H4 end of June storage in Oroville during wetter years is about 480 TAF lower than the NAA-ELT while critical year storage is about 400 TAF higher. Counter to the reduction in Oroville storage, CVP average upstream carryover storage increases about 80 TAF and critical year increases by 380 TAF. Figure 16 (see ATT 2: att18) contains average monthly changes in Delta outflow, increases in Feather River spring time flows are generally not used to increase Delta outflow, but are allowed to support increases in Delta exports.</p> <p>Figure 17 (see ATT 2: att19) displays changes in average monthly Delta exports, there are increases when diverting higher upstream spring releases in wetter years, while there are decreases during summer months in most years. Figure 18 (see ATT 2: att20) contains an average annual summary of project deliveries, total CVP deliveries increase by about 70 TAF while SWP deliveries decrease by about 100 TAF. Drier year SWP deliveries decrease by 250 to 400 TAF, while wet year deliveries increase by 200 TAF. Total CVP deliveries increase in</p>	<p>Under Alternative 4 H4, the SWP would provide the additional Delta outflow outside of COA (as described in Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions in the Draft EIR/EIS). This would result in reductions in SWP water contract deliveries as indicated in Appendix 5A, Section C, Modeling Results.</p> <p>Please note that operations under the new proposed project, Alternative 4A, will be guided by the H3+ operational scenario, which includes Fall X2 requirements consistent with the 2008 USFWS BiOP and spring outflow criteria to minimize and avoid project-related impacts to longfin smelt.</p> <p>For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>

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		<p>wetter years by exporting increased releases from Oroville.</p> <p>The overall effect of the HOS appears to be increases in Oroville releases that support both CVP and SWP exports in wetter years, with modest increases in Delta outflow. There is also a decrease in SWP reliability through large delivery reductions in dryer years accompanied by Oroville storage increases. In addition to increases in dry and critical year storage in Oroville, total CVP dry and critical year carryover increases by 100 TAF and 380 TAF respectively with negligible reductions in wetter years types.</p> <p>CVP and SWP obligation for providing flow to satisfy Delta outflow requirements is described in the Coordinated Operations Agreement (COA). Because the CVP and SWP share responsibility for meeting required Delta outflow based on specific sharing agreement, it doesn't seem reasonable that CVP water supplies would increase while SWP water supplies decrease under this Alternative. The manner in which this alternative is modeled is inconsistent with existing agreements and operating criteria. If the increases in outflow were met based on COA, there would likely be reductions in Shasta and Folsom storage that may cause adverse environmental impacts.</p>	
1722	111	[ATT 2: att16 -- Figure 14. Changes in Feather River Flow, Alt 4 H4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	112	[ATT 2: att17 -- Figure 15. Changes in Oroville Storage, Alt 4 H4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	113	[ATT 2: att18 -- Figure 16. Changes in Delta Outflow, Alt 4 H4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results Please see responses to comments above.
1722	114	[ATT 2: att19 -- Figure 17. Changes in Delta Export, Alt 4 H4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	115	[ATT 2: att20 -- Figure 18. Changes in CVP and SWP Deliveries, Alt 4 H4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results Please see responses to comments above.
1722	116	<p>[From ATT 2:]</p> <p>North Delta Diversion Intakes:</p> <p>Sacramento River flow below the North Delta Diversion (NDD) must be maintained above the specified bypass flow requirement, therefore the NDD rates are limited to the Sacramento River flow above the bypass requirement. Due to an error in CalSim II that specifies an unintended additional bypass requirement, modeling performed for the BDCP EIR/EIS often bypasses more Sacramento River flow than is specified in the BDCP project description. This error has been fixed in the most recent public releases of CalSim II, but BDCP modeling has not been updated to reflect these fixes. Figure 19 (see ATT 2: att21) contains exceedance probability plots showing the Sacramento River required bypass, Sacramento River bypass flow, NDD, and excess Sacramento River flow to the Delta as modeling for BDCP. As can be seen in Figure 19, the bypass flow is always above the bypass requirement in July and August. The BDCP version of CalSim sets a requirement for Sacramento River inflow to the Delta needed to satisfy all Delta flow, quality, and export requirements, this requirement should be removed when modeling the NDD.</p>	<p>The action alternatives, as presented in the DEIR/DEIS and the RDEIR/SDEIS, assume use of a portion of Sacramento River inflow to maintain south Delta water quality in summer months, as described in this comment. In the Final EIR/EIS, the CALSIM II model was modified to simulate Alternative 4A to explicitly provide a preference for use of the south Delta intakes for up to 3,000 cfs in the summer months.</p> <p>For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>

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1722	117	[ATT 2: att21 -- Figure 19. NDD, Bypass Requirement, Bypass Flow, and Excess Sacramento R. flow for Alt 4-ELT (Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	118	<p>[From ATT 2:]</p> <p>CVP/SWP Exports:</p> <p>Overall the Alt 4 will increase exports compared to the NAA-ELT (No Action Alternative-Early Long Term), with the majority of the increased exports realized by the SWP. Figure 20 (see ATT 2: att22) illustrates a comparison between the NAA-ELT and Alt 4-ELT (Early Long Term) of CVP and SWP exports. On average, total combined exports under Alt 4-ELT are projected to increase by 537 TAF from 4.73 MAF to 5.26 MAF compared to the NAA-ELT.</p> <p>With the addition of the North Delta Diversion (NDD) facility, the water exported dramatically shifts from South Delta diversions (SDD) to North Delta diversions. Figure 21 (see ATT 2: att23) illustrates the change in routing of South of Delta exports under Alt 4 compared to the NAA-ELT. On average, export through the South Delta facility are projected to decrease by 2.1 MAF and the North Delta diversions will export 2.6 MAF which includes the 2.1 MAF shifted from the South Delta facility plus the additional 537 TAF of increased exports.</p> <p>Figure 22 (see ATT 2: att24) contains figures for July, August, and September for Alt 4-ELT that plot NDD against SDD. In the months of July to September SDD are occasionally very high, exceeding 14,000 cfs in July, with minimal NDD. This occurs due to outdated model code that imposes an instream flow requirement in Sacramento River flow below Hood in excess of the bypass criteria prescribed in the BDCP. There are numerous occurrences when bypass flows prescribed in the BDCP are exceeded and SDD are higher than expected. On the other hand, there are also many times when NDD are above minimum pumping levels and SDD are below the BDCP prescribed 3,000 cfs threshold indicated by the green line in Figure 22. For unknown reasons, the model code requiring SDD to be greater than 3,000 cfs before NDDs occur from July through September is deactivated in the BDCP modeling of this Alternative.</p> <p>South Delta Diversion at Banks is not limited to existing permit capacity of 6,680 cfs and pumping may reach full capacity of 10,300 cfs in July, August, and September. Figure 23 (see ATT 2: att25) contains exceedance probability charts of South Delta Diversion at Banks for July, August, and September. The chart for July shows SDD at Banks exceeding existing permit capacity 20% of years, in August this occurs in about 7% of years. There are South Delta diversions at Banks 25% of the time in September while diversions from the Sacramento River may range from 2,500 cfs to 7,500 cfs.</p> <p>Generally, exports increase during winter and spring months due to the ability to avoid fishery concerns by diverting at the North Delta rather than South Delta.</p>	<p>The initial portion of the comment related to the CALSIM II results is consistent with model results presented in the RDEIR/SDEIS.</p> <p>With respect to the portion of the comment related to the south Delta diversion preference in the summer months, the action alternatives, as presented in the DEIR/DEIS and the RDEIR/SDEIS, assume use of a portion of Sacramento River inflow to maintain south Delta water quality in summer months, as described in this comment. In the Final EIR/EIS, the CALSIM II model was modified to simulate Alternative 4A to explicitly provide a preference for use of the south Delta intakes for up to 3,000 cfs in the summer months.</p> <p>With respect to the portion of the comment related the Clifton Court Forebay diversion limitations, the Final EIR/EIS includes model results for Alternatives 2D, 4A, and 5A as compared to the No Action Alternative and Existing Conditions in Appendix 5A, Section C, in addition to the model results previously provided in the Draft EIR/EIS. The comparative results between Alternatives 2D, 4A, and 5A and the No Action Alternative and the Existing Conditions are generally consistent with the impact analysis results presented in the RDEIR/SDEIS. Under the Proposed Project (Alternative 4A), the model assumptions maintained the existing diversion limits at Clifton Court Forebay per the USACE agreements; and export of up to 10,300 cfs of SWP water in the wetter months is based upon conveyance through the Banks Pumping Plant of water diverted at the north and south Delta intakes.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	119	[ATT 2: att22 -- Figure 20. Change in CVP (Jones) and SWP (Banks) Exports (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	120	[ATT 2: att23 -- Figure 21. Change in Conveyance Source of Exports (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	121	[ATT 2: att24 -- Figure 22. Alt 4-ELT (Early Long Term) North Delta Diversion Versus South	This comment refers to a figure in the attachment that presents results. Please see responses to

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		Delta Diversion for July, August, and September]	comments above.
1722	122	[ATT 2: att25 -- Figure 23. South Delta Diversion at Banks]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	123	[From ATT 2:] Delta Outflow: Figure 24 (see ATT 2: att26) illustrates a comparison of Delta outflow between the NAA-ELT (No Action Alternative-Early Long Term) and Alt 4-ELT (Early Long Term). Decreases in Delta outflow are the result of the CVP and SWP ability to increase Delta exports in Alt 4-ELT. The apparent increase in Delta outflow in October is partially due to additional export restrictions though Old & Middle River flow requirements. However, the increase in October Delta outflow is also due to an unrealistic operation of the Delta Cross Channel. The additional export restrictions cause the flow standards imposed at Rio Vista to be the controlling point in CVP and SWP operations; the water quality standards are all being met and do not require flows above the amount needed to satisfy the Rio Vista standard. Meeting the Rio Vista flow standards without closing the Delta Cross Channel gate results in releasing more water from upstream reservoirs than would otherwise be necessary. This occurs because a certain amount of the water released to meet the Rio Vista flow standards would flow into the Central Delta at location of the Delta Cross Channel gate. This water would not make it to Rio Vista and therefore would not be counted towards meeting the Rio Vista flow standards. However, due to the BDCP model's assumed restrictions on exports at this time, this water could not be pumped from the South Delta facilities and thus ends up as "extra" Delta outflow. By closing the Delta Cross Channel gate, the operators would assure that all of the water released to meet the Rio Vista flow standards would be counted towards those standards. The BDCP model's assumptions that the Delta Cross Channel gate would not be closed are not practical or a sensible operation as the operators confirmed they would close the gate during these conditions to avoid the unnecessary loss of water supplies (as was done in October and November 2013). The assumption in the BDCP model to maintain the gate in the open position causes it to overstate the amount of Delta outflow.	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>The Delta Cross Channel assumptions in the CALSIM II model are consistent between the No Action Alternative and action alternatives in the EIR/EIS. As discussed in this comment, the criteria for Sacramento River flows at Rio Vista in October would become more critical with action alternatives that include north Delta intakes. Under the future operations, there would be a balance between operations of Delta Cross Channel closure to minimize effects on upstream reservoir storage and water quality criteria. Operations under proposed project (Alternative 4A) would increase Delta outflow due to Old and Middle River criteria which will improve water quality as compared to the No Action Alternative. It is recognized that assumptions were used for the impact analysis in the EIR/EIS based upon modeling analyses; and that the real-time operations would provide more flexibility than the CALSIM II monthly-model time step. However, the incremental differences that could occur under the No Action Alternative conditions and Alternative 4A would be similar with different CALSIM II model assumptions in the No Action Alternative conditions and Alternative 4A.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	124	[ATT 2: att26 -- Figure 24. Delta Outflow Change (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	125	[From ATT 2:] CVP/SWP Reservoir Carryover Storage: CVP/SWP reservoir operating criteria in the Alt4-ELT (Early Long Term) scenario differs from the NAA-ELT (No Action Alternative-Early Long Term) scenario. This difference is primarily driven by changes in both CVP and SWP San Luis Reservoir target storage. CalSim II balances upstream Sacramento Basin CVP and SWP reservoirs with storage in San Luis Reservoir by setting target storage levels in San Luis Reservoir. CalSim II will release water from upstream reservoirs to meet target levels in San Luis Reservoir and the target storage will be met as long as there is capacity to convey water and water is available in upstream reservoirs. In Alt 4 the San Luis Reservoir target storage is set very high in the spring and early summer months, and then reduced in August and set to San Luis Reservoir dead pool from September through December. This change in San Luis target storage relative to the NAA (No Action Alternative) causes upstream reservoirs to be drawn down from June through	<p>One of the goals for the BDCP EIR/EIS Alternatives modeling is to maintain similar end-of-May and end-of-September carryover storage conditions as simulated under the No Action Alternative. In the BDCP EIR/EIS Alternatives with the north Delta diversion facility, the availability of the additional export capacity in the winter and spring months compared to the No Action Alternative allows capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the NAA. This also changes the release patterns from the upstream reservoirs. However, the end-of-May and end-of-September storage conditions are similar to the No Action Alternative under Alternative 4. The effects of modified release patterns and changes in the storage conditions on the river temperatures are evaluated in Chapter 11, Fish and Aquatic Resources, in the BDCP FEIR/EIS.</p> <p>For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>

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		August and then recuperate storage relative to the NAA by cutting releases in September; Alt 4 upstream storage then remains close to the NAA during fall months. These operational criteria cause changes in upstream cold water pool management and affect several resource areas. Figure 25 (see ATT 2: att27), Figure 26 (see ATT 2: att28), Figure 27 (see ATT 2: att29), and Figure 28 (see ATT 2: att30) contain exceedance charts for carryover storage and average monthly changes in storage by Sacramento Valley Water Year Type for North of Delta CVP and SWP reservoirs.	
1722	126	[From ATT 2:] San Luis Reservoir Operations: In addition to changes in upstream storage conditions, changes in San Luis Reservoir target storage cause San Luis Reservoir storage to reach dead pool in many years with subsequent SOD (South of Delta) delivery shortages. Although some delivery shortages are due to California Aqueduct capacity constraints, the largest annual delivery shortages are a result of inappropriately low target storage levels. Average annual Table A shortages due to artificially low San Luis reservoir storage levels increased from 3 TAF in the NAA-ELT (No Action Alternative-Early Long Term) scenario to 35 TAF in the Alt4-ELT (Early Long Term) scenario. (Shortages due only to a lack of South of Delta conveyance capacity were not included in these averages.) Such shortages occurred in 2% of simulated years in the NAA-ELT scenario and 23% of years in the Alt4-ELT scenario. In addition to the inability to satisfy Table A allocations, low storage levels cause loss of SWP contractors' Article 56 water stored in San Luis Reservoir. Average annual Article 56 shortages were 43 TAF in the Alt4-ELT scenario because of low San Luis storage and 5 TAF in the NAA-ELT scenario. Low San Luis storage causes Article 56 shortages in 27% of simulated years in the Alt4-ELT scenario as compared to 5% of simulated years in the NAA-ELT. Another consequence of low storage levels in San Luis Reservoir is a shift in water supply benefits from Article 21 to Table A. As seen in Figure 29 (see ATT 2: att31) and Figure 30 (see ATT 2: att32) San Luis Reservoir storage fills more regularly in the Alt 4-ELT scenario, but is exercised to a lower point more often.	The San Luis Reservoir rule curve is an input to CALSIM II which provides a target storage each month that is dependent on the South-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgement of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta exports, different San Luis Reservoir rule curves can result in differences in upstream reservoir release patterns, and Delta exports. Assumed San Luis Reservoir rule curve could differ depending on the available export capacity during winter and spring months, and the need to protect upstream carryover storage in the fall months. For the No Action Alternative simulation, the San Luis Reservoir rule curve is managed to maximize filling during summer and fall months when the Delta export pumping is less constrained to minimize situations in which south-of-Delta shortages may occur due to lack of storage or exports. Under the EIR/EIS Alternatives with the north Delta diversion, the CALSIM II San Luis Reservoir rule curve was modified in expectation that the new north Delta diversion facility would allow capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. Additional modifications to the rule curve were included to preserve upstream carryover storage conditions while minimizing south-of-Delta shortages in the fall months. Under Alternative 4, the San Luis Reservoir storage conditions are also affected by the restrictive south Delta export operations in October.
1722	127	[ATT 2: att27 -- Figure 25. Trinity Reservoir Carryover Storage and Average Monthly Changes (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)) in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	128	[ATT 2: att28 -- Figure 26. Shasta Reservoir Carryover Storage and Average Monthly Changes (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)) in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	129	[ATT 2: att29 -- Figure 27. Oroville Reservoir Carryover Storage and Average Monthly Changes (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)) in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	130	[ATT 2: att30 -- Figure 28. Folsom Reservoir Carryover Storage and Average Monthly Changes (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)) in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	131	[ATT 2: att31 -- Figure 29. Federal Share of San Luis Reservoir (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.

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1722	132	[ATT 2: att32 -- Figure 30. State Share of San Luis Reservoir (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	133	[From ATT 2:] CVP Water Supply: The changes in water supply to CVP customers, based on customer type and water year type is shown in Table 3 (see ATT 2: att33). Alt 4-ELT (Early Long Term) shows an average increase of approximately 109,000 AF of delivery accruing to CVP customers with CVP SOD (South of Delta) agricultural contractors receiving most of the benefit. Changes in Sacramento River Settlement contract deliveries are not an anticipated benefit of the BDCP, increases in these deliveries in Alt 4-ELT relative to the NAA-ELT (No Action Alternative-Early Long Term) are due to the shortages in the NAA-ELT from climate change that are reduced in Alt 4-ELT. Although the BDCP modeling demonstrates minor benefits to NOD (North of Delta) CVP service contractors, this increase is not an anticipated benefit of the BDCP. Consistent with modeling for the NAA-ELT Scenario, San Joaquin River Exchange Contractors receive full deliveries in accordance with contract provisions. Figure 31 (see ATT 2: att34) compares CVP Service Contract delivery of Alt 4-ELT to the NAA-ELT Scenario. Increases in delivery generally occur in below and above normal years.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. The assumptions in all of the action alternatives were to not effect operations to north of Delta SWP and CVP water users as compared to the No Action Alternative. However, for the north of Delta agricultural water users, the CALSIM II model modifies SWP and CVP water deliveries based upon annual precipitation and other factors; therefore, the results, as shown in this comment, can vary between different CALSIM II model runs. The water deliveries to south of Delta agricultural water users in the CALSIM II model are not calculated in the same manner. Therefore, there are no differences in water deliveries to San Joaquin River Exchange Contractors between model runs. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.
1722	134	[ATT 2: att33 -- Table 3. CVP Delivery Summary (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	135	[ATT 2: att34 -- Figure 31. CVP Service Contract Deliveries (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	136	[From ATT 2:] SWP Water Supply: Similar in nature, but larger in magnitude are changes in SWP deliveries. Figure 32 (see ATT 2: att36) and Table 4 (see ATT 2: att35) illustrate the benefits of Alt 4-ELT (Early Long Term) in comparison to the NAA-ELT (No Action Alternative-Early Long Term) Scenario. These studies show an increase in average annual SWP SOD (South of Delta) deliveries of approximately 408,000 AF, but a reduction in critical year deliveries of approximately 177,000 AF. There is an overall reduction in Article 56 deliveries. Typically in modeling and in actual SWP operations, increases in Table A correspond with increases in Article 56. The reason that Article 56 deliveries decrease overall is that insufficient quantities of water are carried over in San Luis and Article 56 contractors are subsequently shorted. SWP delivery increase is slightly less than increases in Banks export because there is increased wheeling for the Cross Valley Canal contractors with BDCP.	The comment is consistent with model assumptions and results presented in the Draft EIR/EIS. This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.
1722	137	[ATT 2: att35 -- Table 4. SWP Delivery Summary (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	138	[ATT 2: att36 -- Figure 32. SWP Contract Deliveries (Alt 4-ELT (Early Long Term) and NAA-ELT (No Action Alternative-Early Long Term))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	139	[From ATT 2:]	The comment is consistent with model assumptions and results presented in the Draft EIR/EIS. It should be noted that Alternative 4A is compared to a No Action Alternative at ELT which includes implementation of

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		<p>Freemont Weir Modifications and Yolo Bypass Inundation:</p> <p>A component of the BDCP Alternative 4 is a modification to the Freemont Weir to allow water to flow into the Yolo Bypass when the Sacramento River is at lower flow than is currently needed. Currently, the Sacramento River does not flow over the Freemont Weir until flow reaches about 56,000 cfs. With the proposed modification Sacramento River flow may enter the Yolo Bypass at much lower flow levels. Figure 33 (see ATT 2: att37) and Figure 34 (see ATT 2: att38) contains charts that compare Freemont Weir flow into the Yolo Bypass to Sacramento River flow at the weir, Figure 33 show this relationship for the NAA-ELT (No Action Alternative-Early Long Term) and Figure 34 shows this same relationship for Alt 4-ELT (Early Long Term).</p> <p>Although CalSim II is a monthly time-step model, it contains an algorithm that estimates daily flow. Therefore, average monthly flows displayed in Figure 33 shows Sacramento River entering the Yolo Bypass at flow levels less than 56,000 cfs, when this occurs water is flowing over the Freemont Weir for a portion of the month. There is a 100 cfs minimum flow diversion from the Sacramento River diversion to the Yolo Bypass from September through June in Alt 4-ELT.</p> <p>Figure 35 (see ATT 2: att39) and Figure 36 (see ATT 2: att40) contains average monthly flow from the Sacramento River over the Freemont Weir to the Yolo Bypass for the NAA-ELT (Figure 35), average monthly difference between Alt 4-ELT and NAA-ELT (Figure 36), and the annual average difference between Alt 4-ELT and NAA-ELT (Figure 37, see ATT 2: att41). In the NAA-ELT scenario flow over the Freemont Weir generally occurs in wet years, this flow is extended to all year types and all months except July and August in Alt 4-ELT. The average annual increase in flow is about 430 TAF.</p>	<p>an operable gate along the Sacramento River at Yolo Bypass to increase frequency and extent of Yolo Bypass flows.</p> <p>For additional information regarding modeling, please see Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Alternative 4A and the associated No Action Alternative include habitat restoration and increased extent and frequency of habitat inundation in the Yolo Bypass. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	140	[ATT 2: att37 -- Figure 33. Fremont Weir vs. Sacramento River NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	141	[ATT 2: att38 -- Figure 34. Fremont Weir vs. Sacramento River Alt 4-ELT (Early Long Term)]	This comment refers to a figure in the attachment that presents. Please see responses to comments above.
1722	142	[ATT 2: att39 -- Figure 35. Average Fremont Weir Flow to Bypass by Water Year Type NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	143	[ATT 2: att40 -- Figure 36. Average Fremont Weir Flow to Bypass by Water Year Alt 4 ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	144	[ATT 2: att41 -- Figure 37. Annual Change in Fremont Weir Flow to Bypass Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	145	<p>[From ATT 2:]</p> <p>Sacramento River Temperature:</p> <p>Figure 38 (see ATT 2: att42) contains exceedance probability plots of Sacramento River temperature at Bend Bridge for the NAA-ELT (No Action Alternative-Early Long Term) and Alt 4-ELT (Early Long Term). For the months of April through July modeling shows few changes in upper Sacramento River water temperature. The Alt 4-ELT scenario shows temperature increases in August relative to the NAA-ELT. In about 75% of years modeling shows about 0.5°F increase in Alt 4-ELT relative to the NAA-ELT. The temperature models</p>	<p>This comment is consistent with modeling results presented in the EIR/EIS for many of the action alternatives. No issues related to the adequacy of the environmental impact analysis in the EIR/S were raised.</p> <p>For upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>

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		will meet inputted target temperatures until Shasta Lake cold water is depleted, this typically occurs in September. This is the likely reason temperature increases in modeling tend to occur in September.	
1722	146	[ATT 2: att42 -- Figure 38. Sacramento River Temperature at Bend Bridge NAA-ELT (No Action Alternative-Early Long Term) and Alt 4-ELT (Early Long Term)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	147	<p>[From ATT 2:]</p> <p>BDCP's "High Outflow Scenario" is not sufficiently defined for analysis:</p> <p>The High Outflow Scenario (HOS) requires additional water (Delta outflow) during certain periods in the spring. The BDCP Model places most of the responsibility for meeting this new additional outflow requirement on the SWP. However, the SWP may not actually be responsible for meeting this new additional outflow requirement. This is because the COA (Coordinated Operations Agreement), as it is currently being implemented, would require a water allocation adjustment that would keep the SWP whole. Where one project (CVP or SWP) releases water to meet a regulatory requirement, the COA requires a water balancing to ensure the burden does not fall inappropriately among the projects. The BDCP Model is misleading because it fails to adjust project operations, as required by the COA, to "pay back" the water "debt" to the SWP due to these additional Delta outflow requirements. Unless there is a significant revision to COA, the BDCP Model overstates the impacts of increased Delta outflow on the SWP and understates the effects on the CVP.</p> <p>Furthermore, after consulting with DWR and [Bureau of] Reclamation project operators and managers, the Reviewers conclude that there is no apparent source of CVP or SWP water to satisfy both the increased Delta outflow requirements and pay back the COA "debt" to the SWP without substantially depleting upstream water storage. It appears, through recent public discussions regarding the HOS, that BDCP anticipates additional water to satisfy the increased Delta outflow requirement and to prevent the depletion of cold water pools will be acquired through water transfers from upstream water users. However, this approach is unrealistic because during most of the spring, when BDCP proposes that Delta outflow be increased, agricultural water users are not typically irrigating. This means that there is not sufficient transfer water available to meet the increased Delta outflow requirements without releasing stored water from the reservoirs. Releasing stored water to meet the increased Delta outflow requirements could potentially impact salmonids on the Sacramento and American River systems.</p>	Under Alternative 4 H4, the SWP would provide the additional Delta outflow outside of COA (as described in Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions in the Draft EIR/EIS). This would result in reductions in SWP water contract deliveries as indicated in Appendix 5A, Section C, Modeling Results. For additional information regarding modeling, please see Master Response 30.
1722	148	<p>[From ATT 2:]</p> <p>Simulated operation of BDCP's dual conveyance, coordinating proposed North Delta diversion facilities with existing south Delta diversion facilities, is inconsistent with the project description:</p> <p>The Draft BDCP and associated Draft EIR/EIS specify criteria for how much flow can be diverted by the new North Delta Diversion (NDD) facilities and specify when to preferentially use either the NDD facilities or the existing South Delta Diversion (SDD) facilities. However, the BDCP Model contains an artificial constraint that prevents the NDD facilities from taking water as described in the BDCP project description. In addition to affecting diversions from the NDD, this artificial constraint contains errors that affect the NAA (No Action Alternative) operation. This error has been fixed by DWR and Reclamation in more recent versions of the model; however, the error remains in the BDCP Model. Additionally, the BDCP Model does</p>	Alternative 4 allows for the discretion and operations flexibility available for the Delta exports in the summer months. As noted in the Tables 5-7 through 5-9 of the Draft EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under all alternatives are analyzed in Chapter 8 of the FEIR/EIS. For additional information regarding water quality, please see Master Response 14. For additional information regarding modeling, please see Master Response 30. For additional information regarding decision tree, please see Master Response 44.

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		not reflect the Summer operations of the SDD that are described in the Draft EIR/EIS as a feature of the BDCP project intended to prevent water quality degradation in the south Delta. The net effect of these two errors is that the BDCP Model significantly underestimates the amount of water diverted from the NDD facilities and overestimates the amount of water diverted from the SDD.	
1722	149	<p>[From ATT 2:]</p> <p>BDCP modeling contains numerous coding and data issues that skew the analysis and conflict with actual real-time operational objectives and constraints:</p> <p>Logic is coded into the CalSim II model to simulate how DWR and Reclamation would operate the system under circumstances for which there are no regulatory or other definitive rules. This attempt to specify (i.e., code) the logic sequence and relative weighting so that a computer can simulate "expert judgment" of the human operators is a critical element to the CalSim II model. In the BDCP Model, some of the operational criteria for water supply allocations and existing facilities such as the Delta Cross Channel and San Luis Reservoir are inconsistent with real-world conditions.</p>	<p>With respect to the specific reference in this comment to CALSIM II model assumptions related to the Delta Cross Channel operations, the Delta Cross Channel assumptions in the CALSIM II model are consistent between the No Action Alternative and action alternatives in the EIR/EIS. As discussed in this comment, the criteria for Sacramento River flows at Rio Vista in October would become more critical with action alternatives that include north Delta intakes. Under the future operations, there would be a balance between operations of Delta Cross Channel closure to minimize effects on upstream reservoir storage and water quality criteria. Operations under proposed project (Alternative 4A) would increase Delta outflow due to Old and Middle River criteria which will improve water quality as compared to the No Action Alternative. It is recognized that assumptions were used for the impact analysis in the EIR/EIS based upon modeling analyses; and that the real-time operations would provide more flexibility than the CALSIM II monthly-model time step. However, the incremental differences that could occur under the No Action Alternative conditions and Alternative 4A would be similar with different CALSIM II model assumptions in the No Action Alternative conditions and Alternative 4A.</p> <p>With respect to the specific reference in this comment to CALSIM II model assumptions related to the San Luis Reservoir operations, Alternative 4 and several other action alternatives (as included in the DEIR/DEIS and the RDEIR/SDEIS) included assumptions for this reservoir that resulted in end-of-September storage less than under the No Action Alternative. For Alternative 4A in the Final EIR/EIS, the San Luis Reservoir rule curve in CALSIM II was slightly modified to increase the end-of-September target level towards the No Action Alternative values to reflect historic operational range.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	150	<p>[From ATT 2:]</p> <p>Revisions approved by DWR and Reclamation for the 2013 baseline:</p> <p>DWR and Reclamation provided CalSim II models used for the 2013 SWP Delivery Reliability Report (DRR) for use in this independent modeling effort. Changes to these models were made for this effort and provided to DWR and Reclamation, many of these changes have since been incorporated into DWR and Reclamation's model and others are under review.</p> <p>The CalSim II model used for the 2013 SWP DRR is located on DWR's web site at: http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSim/Downloads/CalSimDownloads/CalSim-IIStudies/SWPReliability2013/index.cfm. Documentation for this model is described in the report titled: "Draft Technical Addendum to the State Water Project Delivery Reliability Report 2013", also located on DWR's web site at: http://baydeltaoffice.water.ca.gov/swpreliability/. Key modeling assumptions used for this effort are consistent with the 2013 SWP DRR and are listed in Table 4 of the Technical Addendum.</p> <p>CalSim II is continuously being worked on and improved to better represent CVP and SWP operations and fix known problems. The Technical Addendum to the 2013 SWP DRR contains a description of updates and fixes that have occurred since modeling was performed for the BDCP Draft EIR/EIS. Among these changes and fixes are key items that directly affect operation of facilities proposed in BDCP Alternative 4, these items are</p>	<p>The modeling for the BDCP and the BDCP EIR/EIS was based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models). In 2010, CALSIM II Existing Conditions and No Action Alternative models were updated in coordination with the fishery agencies to include the USFWS and NMFS biological opinions. This model formed the basis for the Alternative 1 model development in 2010. All the BDCP Alternatives modeled since then, including Alternative 4, were continued to be based on the 2010 models allowing comparability with the baselines.</p> <p>The models always evolve as the understanding of the operations improves and the assumptions are better defined. In August 2011, several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS modelers. This update was performed to verify if the compiled model improvements have altered the incremental changes between Alternative 1 and the Existing Conditions and No Action Alternative, relative to the 2010 modeling. The findings from the 2011 update showed that the results remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability.</p> <p>Reclamation, DWR and others have continued to improve the 2011 Existing Conditions and No Action Alternative models for other analyses. Modeling is continuously evolving as the operational understanding improves. However, in a planning study such as the BDCP and EIR/EIS, models are generally frozen to allow consistency and comparability in the effects analysis. BDCP and EIR/EIS results were continuously verified using the most recent Existing Conditions and No Action Alternative models available (e.g. 2011 updates and</p>

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		<p>described on page 4 of 2013 SWP DRR Technical Addendum. Key among these fixes is the correction of the Sacramento River flow requirement for Delta inflow that causes NDD (North Delta Diversion) bypass to exceed requirements.</p> <p>A key component of this independent modeling effort is the development of an acceptable CalSim II Future No-Action (FNA) model scenario. The purpose for developing the FNA Scenario is to produce an operational scenario that is realistic enough to understand how changes proposed in the BDCP will affect operations. The process of developing the FNA involved research and development of CalSim II model updates and several meetings with Reclamation and DWR modeling and operations staff. In addition to changes in the FNA Scenario, CalSim II was updated to better reflect operation of the NDD, CVP and SWP reservoir balancing, DCC (Delta Cross Channel) gate operations, and CVP/SWP water supply allocations.</p> <p>Additional Revisions to CalSim II Assumptions:</p> <p>The following changes were made to the 2013 SWP DRR version of CalSim II for this effort:</p> <ul style="list-style-type: none"> * San Joaquin River Basin <ul style="list-style-type: none"> - Turned off San Joaquin River Restoration Program (SJRRP) The SJRRP will cause a change to San Joaquin River inflow to the Delta not associated with the BDCP. To avoid adding complications to the identification of BDCP export benefits the SJRRP was not incorporated into the analysis. - Tuolumne: updated time-series, lookup tables, and WRESL code - Turned off releases for SJRA (VAMP) (San Joaquin River Agreement (Vernalis Adaptive Management Plan)) * Updated Folsom flood diagram * Rice decomposition demand diversions from Feather River * Dynamic EBMUD (East Bay Municipal Utility District) diversion at Freeport * SEP1933 correction to daily disaggregated minimum flow requirements at Wilkins Slough and Red Bluff * CVP M&I (municipal and industrial) demands are updated to reflect assumptions used by Reclamation * Yuba Accord Transfer * Los Vaqueros Reservoir capacity 	<p>2013 updates which included many of the actions referenced in this comment).</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	151	<p>[From ATT 2:]</p> <p>San Joaquin River Basin:</p> <p>BDCP modeling depicted San Joaquin River Basin operations generally consistent with the actions, programs and protocols in place at the time of NOI/NOP (Notice of Preparation/Notice of Intent) issuance. Some of those conditions are now not representative of current development or operations. With the exception of the assumption</p>	<p>See Response to Comment 1722-150.</p>

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		<p>for the SJRRP (San Joaquin River Restoration Program), the independent modeling has revised San Joaquin River Basin operations to reflect more contemporary LOD assumptions. In future level analyses the independent modeling similarly assumes no SJRRP, but only for analysis simplicity concerning BDCP export benefits. Additional analyses may be useful in understanding effects of collectively implementing the BDCP and SJRRP.</p> <p>The San Joaquin River Basin (SJR) is depicted for current conditions, primarily affected by the operations of the Stanislaus, Tuolumne, Merced, and upper San Joaquin River tributaries. The upper San Joaquin River is currently modeled in a "pre-" SJRRP condition, consistent with the 2005 CalSim version. The FNA (Future No Action) Scenario also models the upper San Joaquin River without the SJRRP. The SJR depicts near-term operations including SWRCB D-1641 flow and water quality requirements at Vernalis met when hydrologically possible with New Melones operations. The Vernalis flow objective is set by SWRCB D-1641 February-June base flow requirements. There are no pulse flow requirements during April and May, and there is no acquired flow such as VAMP (Vernalis Adaptive Management Plan) or Merced water. D1641 Vernalis water quality requirements are set at 950/650 EC to provide an operational buffer for the requirement. New Melones is operated to provide RPA (Reasonable and Prudent Alternative) Appendix 2E flows as fishery releases and maintains the DO (dissolved oxygen) objective in the Stanislaus River through a flow surrogate. Stanislaus River water right holders (OID/SSJID - Oakdale Irrigation District/San Joaquin Irrigation District) are provided deliveries up to land use requirements as occasionally limited due to operation agreement (formula). CVP Stanislaus River contractors are provided allocations up to 155 TAF per year in accordance with proposed 3-level plan based on the New Melones Index (NMI). For modeling purposes during the worst drought sequence periods, CVP Stanislaus River contractors and OID/SSJID diversions are additionally cut to maintain New Melones Reservoir storage no lower than 80 TAF. Merced River is operated for Federal Energy Regulatory Commission (FERC) and Davis-Grunsky requirements, and provides October flows as a condition of Merced Irrigation District's water rights. The Tuolumne River is operated to its current FERC requirements and current water use needs and has been updated to recent conditions.</p>	
1722	152	<p>[From ATT 2:]</p> <p>Folsom Lake Flood Control Diagram:</p> <p>During wetter years, inflow to Folsom Lake is sufficient to keep the reservoir full while satisfying all demands downstream. When this condition occurs in actual operations, operators increase releases during summer months to maintain higher instream flows and prevent large releases in the fall to evacuate Folsom to satisfy flood control storage requirements. To prevent the model from keeping the reservoir full going into the fall months and then making large releases to comply with flood control storage requirements, the maximum allowable storage during summer months is ramped from full storage in June to flood control levels in the fall. Although this is a common modeling tool, Folsom storage level for the end of September was set too low in the SWP DRR (Delivery Reliability Report) model causing unnecessary releases and resulting in Folsom storage being lower than desired. An adjustment was made to achieve a more realistic summer drawdown for Folsom.</p>	See Response to Comment 1722-150.
1722	153	[From ATT 2:]	See Response to Comment 1722-150.

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		<p>Feather River Rice Decomposition Demand:</p> <p>Demand for rice straw decomposition (decomp) water from Thermalito Afterbay was added to the model and updated to reflect historical diversion from Thermalito in the October through January period. There are approximately 110,000 acres of rice in the Feather River Service Area irrigated primarily with water diverted from Thermalito Afterbay. Although decomp water demand for the Sacramento River has been included in CalSim II since about 2006, this demand has been absent for the Feather River. Inclusion of decomp demand in the version of CalSim II used for this effort results in an increase in Feather River diversion in fall months of about 160,000 AF.</p>	
1722	154	<p>[From ATT 2:]</p> <p>Dynamic EBMUD (East Bay Municipal Utility District) Diversion at Freeport:</p> <p>Previously the EBMUD operation was pre-determined and input to CalSim II as a time-series. The below criteria was implemented in CalSim II model code to achieve a dynamic representation of EBMUD diversion from the Sacramento River at Freeport.</p> <p>The EBMUD water service contract is unique. EBMUD's total system storage must be forecast to be below 500 TAF on October 1 for CVP water to be available under the EBMUD contract. In years when this occurs, we assume EBMUD will take the minimum of 65 TAF of CVP water or their CVP allocation (133 TAF * CVP M&I (municipal and industrial) allocations) in the first and second years of any multi-year period when CVP water is available under their contract. In the third year, EBMUD would be limited to 35 TAF of CVP water (assuming diversion of 65 TAF in years one and two) because their contract limits cumulative CVP water over three consecutive years to 165 TAF. The 65, 65, 35 TAF annual diversion pattern then repeats if water is available for four or more consecutive years under the EBMUD contract.</p>	See Response to Comment 1722-150.
1722	155	<p>[From ATT 2:]</p> <p>Wilkins Slough Minimum Flow Requirement:</p> <p>Wilkins Slough minimum flow requirements, C129_MIF, includes an adjustment for daily operations based on work with the Sacramento River Daily Operations Model (SRDOM). The flow adjustment for daily flows for September 1933 in the state variable input file appeared unreasonable in the previous model. The flow adjustment in this month was approximately 1,860 cfs and was requiring release of approximately 100 TAF out of Shasta. Review of the entire time-series of daily adjustments showed the adjustment in this month was an order of magnitude greater than in any other September in the simulation period. The year 1933 is a critically dry year, and the third of four consecutive Shasta Critical years. Historical precipitation records from the consumptive use models for the Sacramento Valley, which serves as the basis of much of the CalSim hydrology, were reviewed to ensure there was no unusual precipitation in this month that may create variations in daily flows. It was determined that this daily adjustment is in error. The daily adjustment for this time-step was set to 10 cfs, the value for August 1933.</p>	See Response to Comment 1722-150.
1722	156	<p>[From ATT 2:]</p> <p>CVP M&I (Municipal and Industrial) Demands:</p>	See Response to Comment 1722-150.

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		[Bureau of] Reclamation M&I contractor demands upstream from the Delta have not been adequately represented in CalSim II until Reclamation updated the model in 2012. A more accurate representation of CVP M&I demands, developed in 2012, was incorporated into the model for this effort.	
1722	157	<p>[From ATT 2:]</p> <p>Yuba Accord Water Transfer:</p> <p>In CalSim, Yuba Accord Water Transfers are limited to releases from New Bullards Bar Reservoir. The release is picked up at Banks Pumping Plant or stored in Oroville and Shasta for later release. The additional release from New Bullards Bar is represented in CalSim through an inflow arc. The subsequent refill of New Bullards Bar is represented in CalSim through a diversion arc. In CalSim II, refill is assumed to always occur in the winter following the transfer. However, in the SWP DRR model, there were a few years in which no transfers took place but refill still occurred in the following winter. This was fixed in the updated baseline by capping refill to the previous summer's total transfer.</p>	See Response to Comment 1722-150.
1722	158	<p>[From ATT 2:]</p> <p>Los Vaqueros Reservoir:</p> <p>Expansion of Los Vaqueros Reservoir was completed in 2012. Storage capacity was increased from 103 TAF to 160 TAF. In DWR's BDCP studies, Los Vaqueros capacity was set to 103 TAF. The independent modeling increases Los Vaqueros capacity to 160 TAF.</p>	See Response to Comment 1722-150.
1722	159	<p>[From ATT 2:]</p> <p>San Luis Reservoir Rule-Curve Logic Change:</p> <p>In the independent modeling, San Luis rule-curve logic was refined for both SWP and CVP operations. San Luis rule-curve is used to maintain an appropriate balance between San Luis Reservoir storage and North of Delta reservoirs. The key considerations in formulating rule-curve are as follows:</p> <ul style="list-style-type: none"> * Ensure that sufficient water is available in San Luis Reservoir to meet contract allocations when exports alone are insufficient due to various operational constraints. * Minimize San Luis Reservoir carryover storage to low point criteria (both CVP and SWP) and Article 56 carryover (only SWP). The basic premise is to maintain Reservoir San Luis storage no higher than necessary to satisfy south of Delta obligations to avoid excessive drawdown of upstream storage. <p>In DWR's BDCP studies, there were significant shortages in Table A and Article 56 deliveries because of an improper balance between upstream and San Luis Reservoir storage. The updated SWP rule-curve logic reduces these shortages but does not eliminate them. Also, the updated CVP rule-curve logic allows for higher CVP allocations without increasing risk of shorting SOD (South of Delta) contractors.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. Please see Master Response 30.</p> <p>The San Luis Reservoir rule curve is an input to CALSIM II which provides a target storage each month that is dependent on the South-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgement of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta exports, different San Luis Reservoir rule curves can result in differences in upstream reservoir release patterns, and Delta exports. Assumed San Luis Reservoir rule curve could differ depending on the available export capacity during winter and spring months, and the need to protect upstream carryover storage in the fall months. For the No Action Alternative simulation, the San Luis Reservoir rule curve is managed to maximize filling during summer and fall months when the Delta export pumping is less constrained to minimize situations in which south-of-Delta shortages may occur due to lack of storage or exports. Under the EIR/EIS proposed project and other action alternatives with the north Delta diversion, the CALSIM II San Luis Reservoir rule curve was modified in expectation that the new north Delta diversion facility would allow capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. Additional modifications to the rule curve were included to preserve upstream carryover storage conditions while minimizing south-of-Delta shortages in the fall months. Under Alternative 4A, the San Luis Reservoir storage conditions are also affected by the restrictive south Delta export operations in October.</p> <p>The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or SanLuis Reservoir operations. It is recognized that future projects could change the San Luis Reservoir rule curve. However, these future actions would require engineering and environmental analyses that would consider the potential changes to the existing and planned infrastructure at the time of those</p>

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			<p>studies. Changes in these assumptions would be speculative and are not included in the No Action Alternative in this EIR/EIS. Changes in these assumptions also are not necessarily consistent with the project objectives or purpose and need for the project proponents, and are not included in the action alternatives.</p> <p>It should be noted that the CALSIM II model results in the EIR/EIS are presented as “deliveries” to the SWP and CVP water users, and not “allocations” as referred to in this comment. The “deliveries” values were presented because deliveries are frequently less than “allocation” values due to factors other than water supplies; and therefore, the “deliveries” are do not overstate the amount of water available to water users (as could occur if the “allocation” values were used.</p> <p>For additional information regarding upstream reservoir effects please see Master Response 25.</p>
1722	160	<p>[From ATT 2:]</p> <p>Upstream Storage Release to Fill San Luis Reservoir Above Needed Supply:</p> <p>In the BDCP NAA (No Action Alternative) and the independent modeling FNA (Future No Action), the model has a priority to release excess stored water that will likely be released for flood control purposes from Shasta and Folsom storage for export at Jones Pumping Plant to storage in San Luis Reservoir in the late summer and early fall months. The purpose was to get a head start on filling San Luis Reservoir for the coming water year if there is a high likelihood of Shasta or Folsom spilling. This was an assumed CVP/SWP adaptation to the export reductions in the winter and spring months due to the salmon and smelt Biological Opinions. However, with the NDD (North Delta Diversion) facility in Alt 4, winter and spring export restrictions impact CVP exports much less and there is no longer a reason to impose this risk on upstream storage. As such, the weights, or prioritizations, of storage in Shasta and Folsom were raised so that excess water would not be released specifically to increase CVP San Luis storage Reservoir above rule-curve. This was changed in Alt 4 and not the FNA to better reflect how the system may operate under these different conditions.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. In the EIR/EIS action alternatives, including Alternative 4A, upstream reservoir operational criteria were consistent with the criteria included in the No Action Alternative. The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>
1722	161	<p>[From ATT 2:]</p> <p>Delivery allocation adjustment for CVP SOD (South of Delta) Ag service and M&I (Municipal and Industrial) contractors:</p> <p>CVP SOD Ag service and M&I allocations are limited by both systemwide water supply (storage plus inflow forecasts) and Delta export constraints; whereas similar CVP NOD (North of Delta) allocations are dependent solely on water supply. This frequently results in SOD water service contractors receiving a lower contract year allocation than NOD water service contractors, especially under the Biological Opinion export restrictions. However, with the NDD (North Delta Diversion) facility operations as proposed under Alt 4 H3, the CVP can largely bypass these Delta export restrictions, and the export capacity constraint on CVP SOD allocations was determine to be overly conservative. Therefore, the export capacity component of CVP SOD allocations was removed in the BDCP Alternative and both SOD and NOD CVP allocations are equal and based only on water supply.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. In the EIR/EIS action alternatives, including Alternative 4A, allocation criteria were consistent with the criteria included in the No Action Alternative. Please see Master Response 30.</p>
1722	162	<p>[From ATT 2:]</p> <p>Folsom/Shasta Balance:</p> <p>CVP operations were refined in the BDCP Alternative to provide maximum water supply benefits to CVP contractors while protecting Trinity, Shasta, and Folsom carryover storage in</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. In the EIR/EIS action alternatives, including Alternative 4A, upstream reservoir operational criteria were consistent with the criteria included in the No Action Alternative. The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir</p>

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		<p>the drier years. As a whole, this was accomplished with refinements to allocation logic and San Luis rule-curve. However, in initial study runs, an imbalance between Folsom and Shasta was created; while there was a total positive impact to upstream storage in dry years, there was a negative impact to Folsom storage. This was resolved by inserting Folsom protections in the Shasta-Folsom balancing logic. With these protections, the positive carryover impacts were distributed to Trinity, Shasta, and Folsom.</p>	<p>operations.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>
1722	163	<p>[From ATT 2:]</p> <p>North Delta Diversion (NDD) Bypass Criteria:</p> <p>The daily disaggregation method for implementing NDD bypass criteria as implemented in DWR's BDCP model was left mostly intact for the updated BDCP studies. However, there were modifications to properly fit the bypass criteria implementation within the latest CalSim operations formulation. Modifications are as follows:</p> <ol style="list-style-type: none"> 1. No NDD operations occur in cycles 6 through 9 so that Delta operations and constraints can be fully assessed without NDD interference. 2. Cycles 10 and 11 (Daily 1 and Daily 2 respectively) were added to determine NDD operations given various operational constraints including the NDD bypass criteria. 3. From July to October, bypass criteria are based on monthly average operations (no daily disaggregation). Given the controlled reservoir releases at this time and the constant bypass criteria (5,000 cfs from July to September and 7,000 cfs in October), this was determined to be a reasonable assumption. This also simplified coordination of DCC (Delta Cross Channel) gate operations with NDD in October which will be discussed later. 4. When warranted by conditions in cycle Daily 1 (cycle 10), the bypass criteria in May and June were allowed to be modeled on a monthly average basis in cycle Daily 2 (cycle 11). This allowed a reduction in the number of cycles necessary to determine the fully allowed diversion under the bypass criteria when the Delta was in balance and additional upstream releases were made to support diversions from the North Delta. 	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. In the EIR/EIS action alternatives, including Alternative 4A, north Delta bypass criteria were developed by the Lead Agencies in the DEIR/DEIS (including DWR, Reclamation, USFWS, and NMFS) to provide protection for aquatic resources and downstream water users. Please see Master Response 30.</p>
1722	164	<p>[From ATT 2:]</p> <p>Delta Cross Channel Gate Reoperation in October:</p> <p>The BDCP Alt 4 results in significantly more October surplus Delta outflow as compared to the baseline. The cause of this Delta surplus at a time when the Delta is frequently in balance is a combination of proposed through-Delta export constraints (OMR (Old & Middle River) flow criteria and no through-Delta exports during the San Joaquin River October pulse period), Rio Vista flow requirements, and DCC gate operations. In DWR's BDCP studies, it was assumed that the DCC gates would be open for the entire month of October thereby requiring much higher Sacramento River flows at Hood in order to meet the Rio Vista flow requirement than if the DCC gates were closed. Whereas in the independent BDCP modeling it was assumed that the DCC gates were closed for a number of days during the month such that the 7,000 cfs NDD (North Delta Diversion) bypass criteria would be sufficient to meet the weekly average Rio Vista flow requirements. The intent was to minimize surplus Delta outflow while meeting Delta salinity standards and maintaining enough bypass flow to use the NDD facility for SOD (South of Delta) exports. This is an approximation of what is likely to occur in real-time operations under similar circumstances. Further gate closures may be</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations. Please see Master Response 30.</p> <p>In the EIR/EIS action alternatives, including Alternative 4A, the Delta Cross Channel assumptions in the CALSIM II model are consistent between the No Action Alternative and action alternatives in the EIR/EIS, as described in the response to 1633-28. As discussed in this comment, the criteria for Sacramento River flows at Rio Vista in October would become more critical with action alternatives that include north Delta intakes. Under the future operations, there would be a balance between operations of Delta Cross Channel closure to minimize effects on upstream reservoir storage and water quality criteria. Operations under proposed project (Alternative 4A) would increase Delta outflow due to Old and Middle River criteria which will improve water quality as compared to the No Action Alternative. It is recognized that assumptions were used for the impact analysis in the EIR/EIS based upon modeling analyses; and that the real-time operations would provide more flexibility than the CALSIM II monthly-model time step. However, the incremental differences that could occur under the No Action Alternative conditions and Alternative 4A would be similar with different CALSIM II model assumptions in the No Action Alternative conditions and Alternative 4A.</p>

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		possible as salinity standards allow if operators decide to preserve upstream storage at the expense of NDD diversions. This type of operation would require additional model refinements.	For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.
1722	165	<p>[From ATT 2:]</p> <p>Wilkins Slough minimum flow requirement:</p> <p>Currently in CalSim II, relaxation of the Wilkins Slough minimum flow requirement is tied to CVP NOD (North of Delta) Ag Service Contractor allocations. This does not reflect actual operations criteria where relaxation of the flow requirement is dependent solely on storage conditions at Shasta. From the comparative analysis perspective of our CalSim planning studies, this introduces a potential problem: changes in CVP NOD Ag Service allocations can result in unrealistic changes in required flow at Wilkins Slough, and such changes in Wilkins Slough required flow can result in unrealistic impacts to Shasta storage. To bypass this problem, we assumed that the required flow at Wilkins Slough in the alternative was equal to the baseline.</p>	<p>Minimum flow requirement assumptions at Wilkins Slough in the BDCP EIR/EIS modeling of the Existing Conditions, No Action Alternative and all action alternatives are consistent, as noted in the EIR/EIS Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions.</p> <p>For additional information regarding modeling, please see Master Response 30.</p>
1722	166	[ATT 2: att43 -- Figure 39. Alt 4 Features]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	167	<p>[From ATT 2:]</p> <p>CVP/SWP Delta Exports:</p> <p>Average annual exports at Jones pumping plant are about 170 TAF higher in the Alt 4 Scenario compared to the FNA (Future No Action) scenario, as seen in Figure 40 (see ATT 2: att44). Increases generally occur from January through June when Old & Middle River (OMR) criteria limit use of Jones Pumping Plant in the FNA Scenario. Decreases occur in July in drier year types because the increased ability to convey water in spring months reduces the need to convey water stored in upstream reservoirs in July. Reductions in Jones export in October are partially a function of increases in OMR flow requirements.</p> <p>Similar to export at Jones, Banks exports are generally higher from January through June because use of NDD (North Delta Diversions) allows pumping that is not possible in the FNA Scenario, as seen in Figure 41 (see ATT 2: att45). Banks exports are increased during summer months of wetter year types. This is due to earlier wheeling for CVP Cross Valley Canal contractors (without NDD Banks capacity is not typically available until fall in wet years) and wheeling of CVP water through Joint Point of Diversion (JPOD). CVP export at Banks is displayed in Figure 42 (see ATT 2: att46). In wetter years, upstream CVP reservoirs hold more water than can be exported at Jones pumping plant, this water is typically spilled in the FNA scenario. CVP water stored in upstream reservoirs can be released in July, August, and September to support south of Delta beneficial use of water through use of JPOD in Alt 4.</p> <p>Changes in total, South Delta, and North Delta exports are displayed in Figure 43 (see ATT 2: att47). Average annual increase in total Delta exports is about 750 TAF, the increases primarily occur in wetter year types with lesser increases in dryer years. South Delta export decreases about 2.53 MAF in Alt 4 relative to the FNA. Export through the NDD is 3.28 MAF</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. However, the ratios between exports from north of Delta and south of Delta intakes are similar in Alternative 4A presented in the Final EIR/EIS and the MBK model. It should be noted that the project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations. Please see Master Response 30.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>

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		<p>in Alt 4, about 58% of total exports are diverted from the North Delta.</p> <p>Figure 44 (see ATT 2: att48) contains modeling results from Alt 4 for July, August, and September that plot NDD against SDD (South Delta Diversions) (Through Delta Export). There are many occasions when SDD are 3,000 cfs, which is due to criteria specifying that SDD during this time period need to be at least 3,000 cfs prior to diverting at the NDD facility. Although there are about six occurrences in July and three in August where the model did not satisfy this criterion, this issue has not yet been addressed for this modeling effort.</p>	
1722	168	[ATT 2: att44 -- Figure 40. Change in Delta Exports at Jones Alt 4 minus FNA (Future No Action)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	169	[ATT 2: att45 -- Figure 41. Change in Delta Exports at Banks Alt 4 minus FNA (Future No Action)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	170	[ATT 2: att46 -- Figure 42. Change in CVP Delta Exports at Banks Alt 4 minus FNA (Future No Action)]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	171	[ATT 2: att47 -- Figure 43. Change in Conveyance Source of Exports (Alt 4 minus FNA (Future No Action))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	172	[ATT 2: att48 -- Figure 44. Alt 4 North Delta Diversion versus South Delta Diversion for July, August, and September]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	173	<p>[From ATT 2:]</p> <p>Delta Outflow:</p> <p>Figure 45 (see ATT 2: att49) contains annual and monthly average changes in Delta outflow by water year type, average annual Delta outflow decreases about 760 TAF in the Alt 4 Scenario relative to the FNA (Future No Action) Scenario. The decrease is primarily due to increases in Delta exports, which are about 750 TAF on average. Larger decreases generally occur in January through May when exports are constrained in the FNA Scenario and in the Alt 4 Scenario the NDD (North Delta Diversion) can be used to export water. Delta outflow increases in October due to the combination of additional OMR (Old & Middle River) flow requirements that restrict exports and Sacramento River flow requirements at Rio Vista. The additional surplus Delta outflow in Alt 4 was minimized through coordination of the Delta Cross Channel Gate operations with the Rio Vista flow requirements and North Delta Diversion bypass requirements.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. Please see responses to 1722-159 through 1722-167 and Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	174	[ATT 2: att49 -- Figure 45. Changes in Delta Outflow (Alt 4 minus FNA (Future No Action))]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	175	<p>[From ATT 2:]</p> <p>Carryover Storage:</p> <p>Figure 46 (see ATT 2: att50), Figure 47 (see ATT 2: att51), Figure 48 (see ATT 2: att52), and Figure 49 (see ATT 2: att53) contain exceedance charts for carryover storage and average monthly changes in storage by Sacramento Valley Water Year Type for CVP and SWP upstream reservoirs. CVP/SWP reservoirs tend to be higher in the Alt 4 Scenario relative to</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred</p>

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		<p>the FNA (Future No Action) on an average basis. Generally, CVP/SWP reservoirs are higher in storage in dryer year types and can be lower in wetter year types.</p> <p>Ability to convey stored water from upstream CVP/SWP reservoirs to south of Delta water users is increased in Alt 4 relative to the FNA. Therefore, when upstream reservoirs are at higher storage levels more water is released to satisfy south of Delta water demands. This is the primary reason Shasta, Oroville, and Folsom tend to be lower during summer months of wetter years.</p> <p>Currently, and in the FNA Scenario, the CVP and SWP ability to export natural flow, or unstored water, is constrained due to SWRCB D-1641 and requirements in the salmon and smelt Biological Opinions. With the greater ability to export unstored water during winter and spring months in the Alt 4 Scenario, compared to FNA, there is generally a reduced reliance on stored water to satisfy south of Delta demands. The increased ability to export unstored water allows the CVP and SWP to maintain higher storage levels in upstream reservoirs during dryer year types while still maintaining south of Delta deliveries. Carryover storage in the Alt 4 Scenario tends to be higher than the FNA Scenario at lower storage levels, and Alt 4 storage is lower in wetter years when storage levels are higher. In the wettest of years there is enough water in the system that both scenarios have similar carryover storage conditions.</p>	<p>alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p>
1722	176	[ATT 2: att50 -- Figure 46. Trinity Reservoir Carryover Storage and Average Monthly Changes in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	177	[ATT 2: att51 -- Figure 47. Shasta Reservoir Carryover Storage and Average Monthly Changes in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	178	[ATT 2: att52 -- Figure 48. Oroville Reservoir Carryover Storage and Average Monthly Changes in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	179	[ATT 2: att53 -- Figure 49. Folsom Reservoir Carryover Storage and Average Monthly Changes in Storage by Water Year Type]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	180	<p>[From ATT 2:]</p> <p>San Luis Reservoir Operations:</p> <p>As seen in Figure 50 (see ATT 2: att54) and Figure 51 (see ATT 2: att55) below, both CVP and SWP portions of San Luis Reservoir storage fills more regularly in the Alt 4 Scenario. As described earlier in this document, low point in both CVP and SWP San Luis Reservoir is managed to satisfy water supply obligations the model makes during the spring of each year. This is a complex balance involving available upstream storage, available conveyance capacity, delivery allocations, and south of Delta demand patterns. Considering this myriad of variables, there are times when low point in San Luis Reservoir is higher in the Alt 4 Scenario than the FNA (Future No Action) Scenario and times when the opposite is true.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS.</p> <p>The San Luis Reservoir rule curve is an input to CALSIM II which provides a target storage each month that is dependent on the South-of-Delta allocation and upstream reservoir storage. The rule curve allows CALSIM II to emulate judgement of the operators in balancing the north-of-Delta and south-of-Delta storage conditions. In the absence of any other operating criteria controlling the upstream reservoir releases or the Delta exports, different San Luis Reservoir rule curves can result in differences in upstream reservoir release patterns, and Delta exports. Assumed San Luis Reservoir rule curve could differ depending on the available export capacity during winter and spring months, and the need to protect upstream carryover storage in the fall months. For the No Action Alternative simulation, the San Luis Reservoir rule curve is managed to maximize filling during summer and fall months when the Delta export pumping is less constrained to minimize situations in which south-of-Delta shortages may occur due to lack of storage or exports. Under the EIR/EIS proposed project and other action alternatives with the north Delta diversion, the CALSIM II San Luis Reservoir rule curve was modified in expectation that the new north Delta diversion facility would allow capturing winter and spring excess flows and filling of the San Luis Reservoir to a greater extent than the No Action Alternative. Additional modifications to the rule curve were included to preserve upstream carryover storage conditions while minimizing south-of-Delta shortages in the fall months. Under Alternative 4A, the San Luis Reservoir storage conditions are also affected by the restrictive south Delta export operations in</p>

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			<p>October.</p> <p>The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations. It is recognized that future projects could change the San Luis Reservoir rule curve. However, these future actions would require engineering and environmental analyses that would consider the potential changes to the existing and planned infrastructure at the time of those studies. Changes in these assumptions would be speculative and are not included in the No Action Alternative in this EIR/EIS. Changes in these assumptions also are not necessarily consistent with the project objectives or purpose and need for the project proponents, and are not included in the action alternatives. upstream reservoirs or San</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	181	[ATT 2: att54 -- Figure 50. SWP San Luis]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	182	[ATT 2: att55 -- Figure 51. CVP San Luis]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	183	<p>[From ATT 2:]</p> <p>CVP Water Supply:</p> <p>As can be seen in Table 5 (see ATT 2: att56), the independent modeling analysis shows an average increase of approximately 262 TAF of delivery accruing to CVP customers in the Alt 4 Scenario relative to the FNA (Future No Action) Scenario, mostly occurring to CVP SOD (South of Delta) agricultural customers. Delivery increases are greater in wetter year types with lower increases in dryer years. Figure 52 (see ATT 2: att57) contains exceedance probability plots for CVP water service contractor deliveries and allocations. Changes in Sacramento River Settlement and San Joaquin River Exchange Contractor deliveries do not occur in the modeling analysis and are not an anticipated benefit of the BDCP. Although modeling demonstrates minor changes to NOD (North of Delta) CVP service contractors, this increase is not an anticipated benefit of the BDCP.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. Please see responses to 1722-159 through 1722-167. The project objectives and purpose and need statement for this project specifically do not include changes to north of Delta SWP and CVP water users.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding modeling, please see Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	184	[ATT 2: att56 -- Table 5. CVP Delivery Summary]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	185	[ATT 2: att57 -- Figure 52. CVP Water Supply Delivery and Allocation]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.

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1722	186	<p>[From ATT 2:]</p> <p>SWP Water Supply:</p> <p>The independent analysis shows an increase in average annual SWP SOD (South of Delta) deliveries of approximately 450 TAF, but a reduction in critical year deliveries of approximately 116 TAF. Annual average Article 21 deliveries increase by about 100 TAF and Article 56 increases by about 18 TAF. Figure 53 (see ATT 2: att59) contains exceedance probability plots for SWP SOD deliveries for the FNA (Future No Action) and Alt 4 Scenarios, each of these plots show increases in higher delivery years. Although Table A deliveries increase in 65% of years, there are decreases in 35% of the dryer years (see Table 6, ATT 2: att58).</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. Overall, the results of the MBK independent modeling referenced in this comment are similar to results of the CALSIM II modeling presented in the Final EIR/EIS.</p> <p>For additional information regarding modeling, please see Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	187	[ATT 2: att58 -- Table 6. SWP Delivery Summary]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	188	[ATT 2: att59 -- Figure 53. SWP Delivery for Alt 4 and FNA (Future No Action)]	This comment refers to a table in the attachment that presents results. Please see responses to comments above.
1722	189	<p>[From ATT 2:]</p> <p>Delta Exports:</p> <p>Figure 54 (see ATT 2: att60) displays changes in the Delta exports for the BDCP modeling (Alt 4-ELT (Early Long Term) minus NAA-ELT (No Action Alternative-Early Long Term)) and for the independent modeling (Alt 4 minus FNA (Future No Action)). Independent modeling analysis shows about 200 TAF greater increases in exports than the BDCP modeling. A large component of this difference is due to fixes of known modeling issues, as described in the 2013 SWP DRR (Delivery Reliability Report). This difference is also attributable to more realistic reservoir operations, more efficient DCC (Delta Cross Channel) gate operations, changes in water supply allocation logic, and more efficient operation of the NDD (North Delta Diversion).</p> <p>Average annual SDD (South Delta Diversions) are decreased by about 460 TAF in the independent analysis compared to the BDCP modeling. A large component of this difference is due to fixes of known modeling issues, as described in the 2013 SWP DRR. These fixes prevent "artificial" bypass criteria from limiting use of the NDD beyond what is intended in the BDCP project description. This difference is also attributable to more efficient DCC gate operations and more efficient operation of the NDD. Figure 55 (see ATT 2: att61) demonstrates the difference between the BDCP and independent analysis, where SDD decrease by 2.07 MAF in the BDCP analysis and by 2.53 MAF in the independent analysis.</p> <p>Use of the NDD is 680 TAF greater in the independent analysis relative to the BDCP analysis. A large component of this difference is due to fixes of known modeling issues, as described in the 2013 SWP DRR. These fixes prevent "artificial" bypass criteria from limiting use of the NDD beyond what is described in the BDCP project description. Figure 56 (see ATT 2: att62) compares average annual NDD in the BDCP to the independent analysis.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS.</p> <p>Modeling for the EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in the other action alternatives in the EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the BDCP Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the BDCP EIR/EIS. Similarly, when Alternative 4A was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4A as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4A.</p> <p>For additional information regarding baseline, please see Master Response 1. For additional information regarding modeling, please see Master Response 30.</p>
1722	190	[ATT 2: att60 -- Figure 54. Result Difference: Delta Exports]	This comment refers to a figure in the attachment that presents results. Please see responses to

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			comments above.
1722	191	[ATT 2: att61 -- Figure 55. Result Difference: South Delta Diversion]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	192	[ATT 2: att62 -- Figure 56. Result Difference: North Delta Diversion]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	193	[From ATT 2:] Delta Outflow: Total Delta exports in the independent analysis are about 200 TAF greater than the BDCP modeling analysis with a corresponding decrease in Delta outflow in the independent analysis of about 200 TAF. Figure 57 (see ATT 2: att63) compares average annual changes in Delta outflow between the independent analysis and BDCP modeling, BDCP modeling shows a decrease of about 567 TAF and the independent analysis shows a decrease of about 759 TAF.	This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. Please see Master Response 30. Modeling for the EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in the other action alternatives in the EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the BDCP Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the BDCP EIR/EIS. Similarly, when Alternative 4A was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4A as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4A.
1722	194	[ATT 2: att63 -- Figure 57. Result Difference: Net Delta Outflow]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	195	[From ATT 2:] Reservoir Storage: Reservoir operating rules for Alt4 in the BDCP EIR/EIS modeling are changed relative to the NAA (No Action Alternative). In the BDCP EIR/EIS modeling of Alt 4 rules are set to releases more water from upstream reservoirs to San Luis Reservoir from late winter through July, reduce releases in August, and then minimize releases to drive San Luis Reservoir to dead pool from September through December. This operation is inconsistent with actual operations and causes reductions in upstream storage from May through August. Figure 58 (see ATT 2: att64) and Figure 59 (see ATT 2: att65) contain exceedance probability plots of carryover storage and average monthly changes in storage by water year type for Shasta and Folsom for the BDCP and independent modeling. Although carryover storage for Alt 4 and the NAA is similar in the BDCP EIR/EIS modeling, there is drawdown from June through August that may cause impacts to cold water pool management. In the independent modeling upstream reservoirs are drawn down more in years when storage is available while dryer year storage is maintained at higher levels, this is illustrated in the carryover plots for Shasta and Folsom in Figure 58 and Figure 59.	This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS. The project objectives and purpose and need statement for this project did not include changes to upstream reservoirs or San Luis Reservoir operations. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include changes to upstream CVP reservoir balancing, May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the BDCP EIR/EIS. Modeling for the EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in the other action alternatives in the EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the BDCP Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between

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			<p>Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the BDCP EIR/EIS. Similarly, when Alternative 4A was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4A as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4A.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding upstream reservoir effects, please see Master Response 25. For additional information regarding modeling, please see Master Response 30.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	196	[ATT 2: att64 -- Figure 58. Result Difference: Shasta Storage]	This comment refers to a figure in the attachment that presents results.
1722	197	[ATT 2: att65 -- Figure 59. Result Difference: Folsom Storage]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	198	<p>[From ATT 2:]</p> <p>North Delta Diversions (NDD):</p> <p>Independent modeling shows greater NDD during July and other months because the BDCP EIR/EIS modeling includes artificially high Sacramento River bypass flow requirements. Figure 60 (see ATT 2: att66) contains exceedance probability plots of Sacramento River required bypass, Sacramento River bypass flow, NDD, and excess Sacramento River flow to the Delta. As can be seen in Figure 60, bypass flow is always above the bypass requirement. The BDCP version of CalSim sets a requirement for Sacramento River inflow to the Delta that the independent modeling does not need in order to satisfy Delta requirements, therefore the NDD is higher in the independent modeling.</p>	<p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives which included different assumptions than the CALSIM II model runs used in preparation of the EIR/EIS.</p> <p>The action alternatives, as presented in the DEIR/DEIS and the RDEIR/SDEIS, assume use of a portion of Sacramento River inflow to maintain south Delta water quality in summer months, as described in this comment. In the Final EIR/EIS, the CALSIM II model was modified to simulate Alternative 4A to explicitly provide a preference for use of the south Delta intakes for up to 3,000 cfs in the summer months.</p> <p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p>
1722	199	[ATT 2: att66 -- Figure 60. NDD (North Delta Diversion), and Sacramento River Flow]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	200	<p>[From ATT 2:]</p> <p>Delta flows below the NDD (North Delta Diversion) facility:</p> <p>Figure 61 (see ATT 2: att67) contains monthly exceedance probability plots for Sacramento River below the NDD for the following scenarios: 1) BDCP NAA-ELT (No Action Alternative-Early Long Term), 2) BDCP Alt 4-ELT (Early Long Term), 3) independent modeling FNA (Future No Action), and 4) independent modeling Alt 4. The most significant differences in flow changes occur in October, July, August, and September. Changes in Sacramento River</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>This comment was based on the MBK independent modeling of the No Action Alternative and alternatives</p>

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		<p>flow entering the Delta are a key indicator of changes in interior Delta flows, water levels, and water quality.</p> <p>For the month of October the independent modeling shows flow below the NDD to be about 2,000 cfs lower than the BDCP modeling. The difference in this month is largely due to reoperation (closure) of the cross channel gate to lessen the amount of Sacramento River flow at Hood necessary to maintain Rio Vista flow requirements downstream of the cross channel gates.</p> <p>The most substantial difference between the BDCP and independent modeling occurs in July and August. The differences in these two months are primarily attributable to model fixes that have occurred since the BDCP modeling was performed. In the independent modeling, July flows are reduced on average about 7,500 cfs while BDCP shows a reduction of about 3,300 cfs. In the independent modeling August flows are reduced on average about 5,900 cfs while BDCP shows a reduction of about 3,900 cfs.</p> <p>In the independent modeling September flows are reduced by about 6,100 cfs while BDCP modeling shows a reduction of about 5,300 cfs. The independent modeling shows Sacramento River flow entering the Delta to be about 7,000 cfs 50% of the time, BDCP modeling show Sacramento River flow is about 8,000 cfs 50% of the time.</p>	<p>which included different assumptions than the CALSIM II model runs used in preparation of the draft EIR/EIS.</p> <p>The Delta Cross Channel assumptions in the CALSIM II model are consistent between the No Action Alternative and action alternatives in the EIR/EIS. As discussed in this comment, the criteria for Sacramento River flows at Rio Vista in October would become more critical with action alternatives that include north Delta intakes. Under the future operations, there would be a balance between operations of Delta Cross Channel closure to minimize effects on upstream reservoir storage and water quality criteria. Operations under Proposed Project (Alternative 4A) would increase Delta outflow due to Old and Middle River criteria which will improve water quality as compared to the No Action Alternative. It is recognized that assumptions were used for the impact analysis in the EIR/EIS based upon modeling analyses; and that the real-time operations would provide more flexibility than the CALSIM II monthly-model time step. However, the incremental differences that could occur under the No Action Alternative conditions and Alternative 4A would be similar with different CALSIM II model assumptions in the No Action Alternative conditions and Alternative 4A.</p> <p>For additional information regarding purpose and need, please see Master Response 3. For additional information regarding modeling, please see Master Response 30.</p>
1722	201	[ATT 2: att67 -- Figure 61. Sacramento River below Hood]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	202	<p>[From ATT 2:]</p> <p>Sacramento River water entering the Central Delta:</p> <p>In CalSim, flow through the DCC (Delta Cross Channel) gate and Georgianna Slough from the Sacramento River into the Central Delta is assumed to be linearly dependent on flow at Hood. There are two linear relationships; one is used when the DCC gates are closed, and the other is used when the DCC gates are open. The 2013 SWP Delivery Reliability Report (DRR) CalSim II modeling, and therefore our independent modeling, used different linear flow relationships than BDCP. The BDCP and 2013 DRR (and independent) flow relationships for both the open and closed gate conditions are compared in Figure 62 (see ATT 2: att68). When Sacramento River flow at Hood is in the range from 5,000 cfs to 10,000 cfs the balance between Hood flow, required flow at Rio Vista, and DCC gate operation can affect upstream reservoir operations, SOD (South of Delta) exports, and Delta outflow. As shown in Figure 62, given the same flow at Hood and DCC gates closed, the independent analysis will show slightly higher flow into the Central Delta (12% to 17% difference for the Hood flows in the 5,000 cfs to 10,000 cfs range). With DCC gates open the same flow at Hood, the independent analysis will show lower flow into the Central Delta (-15% to -25% difference for the Hood 5,000 cfs to 10,000 cfs range). Figure 63 (see ATT 2: att69) and Figure 64 (see ATT 2: att70) show the differences through the DCC and combined flow through the DCC and Georgiana Slough.</p> <p>In addition to the differences in flow equations for portion of Sacramento River entering the interior Delta through the DCC and Georgiana Slough, the DCC gate operations were modified for the month of October. In the independent modeling, the DCC gate is operated to balance the amount of Sacramento River flow needed to meet flow standards at Rio Vista on the Sacramento River and flow needed to meet western Delta water quality. This changed operation often results in DCC gate closures for about 15 days during the month of</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>This comment references one of the differences between the 2010 CALSIM II model and the 2013 updated CALSIM II model update. Modeling for the EIR/EIS has been based on the Existing Conditions, No Action Alternative, and Alternative 1 models developed in April – May of 2010 (2010 models), which were the state-of-the-art at the time, and formed the basis for universal assumptions in the other action alternatives in the EIR/EIS. However, in August 2011 several model improvements were identified by the water agencies, fishery agencies, and the modeling community. The identified improvements were compiled, and the Existing Conditions, No Action Alternative, and Alternative 1 models were updated in coordination with DWR, Reclamation and USFWS. This update was performed to verify if the compiled model improvements altered the incremental changes between the BDCP Alternative 1 and the Existing Conditions and the No Action Alternative relative to the 2010 models. The findings from the 2011 update showed that the incremental differences between Alternative 1 and the Existing Conditions and the No Action Alternative remained consistent with the 2010 modeling. Therefore, the action alternatives modeled since 2011 continued to rely on the 2010 modeling, allowing consistency and comparability throughout the BDCP EIR/EIS. Similarly, when Alternative 4A was modeled using the 2013 baseline, the incremental changes in the operational results for Alternative 4A as compared to the No Action Alternative were similar to the prior incremental results between the 2010 modeling for the No Action Alternative and Alternative 4A. For additional information regarding modeling, please see Master Response 30.</p>

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		October. The reduction in flow through the DCC during October can be seen in Figure 64.	
1722	203	[ATT 2: att68 -- Figure 62. Flow through Delta Cross Channel and Georgiana Slough versus Sacramento River Flow at Hood]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	204	[ATT 2: att69 -- Figure 63. Cross Channel Flow]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	205	[ATT 2: att70 -- Figure 64. Flow through Delta Cross Channel and Georgiana Slough]	This comment refers to a figure in the attachment that presents results. Please see responses to comments above.
1722	206	<p>[From ATT 2:]</p> <p>Based on the Independent Modeling, the amount of water exported (diverted from the Delta) may be approximately 200 thousand acre-feet (TAF) per year higher than the amount disclosed in the Draft EIR/EIS. This total represents</p> <ul style="list-style-type: none"> - approximately 40 TAF/yr more water diverted and delivered to the SWP south of Delta contractors, and - approximately 160 TAF/yr more water diverted and delivered to the CVP south of Delta contractors. <p>The BDCP Model estimates that, under the NAA-ELT (No Action Alternative-Early Long Term) (without the BDCP), total average annual exports for CVP and SWP combined are estimated to be 4.73 million acre feet (MAF) and in the Independent Modeling FNA (Future No Action) combined exports are 5.61 MAF. The BDCP Model indicates an increase in exports of approximately 540 TAF and the Independent Modeling shows an increase of approximately 750 TAF in Alt 4.</p> <p>The Independent Modeling suggests that Delta outflow would decrease by approximately 200 TAF/yr compared to the amount indicated in the Draft EIR/EIS.</p> <ul style="list-style-type: none"> - This lesser amount of Delta outflow has the potential to cause greater water quality and supply impacts for in-Delta beneficial uses and additional adverse effects on species. To determine the potential effects of the reduced amount of outflow, additional modeling is needed using tools such as DSM2. <p>The BDCP Model does not accurately reflect the location of the diversions that the SWP and CVP will make from the Delta.</p> <ul style="list-style-type: none"> - When the errors in the model are corrected, it reveals that the North Delta intakes could divert approximately 680 TAF/yr more than what was disclosed in the BDCP Draft EIR/EIS, and - the amount of water diverted at the existing South Delta facilities would be approximately 460 TAF/yr less than what is projected in the BDCP Draft EIR/EIS. <p>Hydrologic modeling of BDCP alternatives using CalSim II has not been refined enough to understand how BDCP may affect CVP and SWP operations and changes in Delta flow dynamics. Better defined operating criteria for project alternatives is needed along with adequate modeling rules to analyze how BDCP may affect water operations. Without a clear understanding of how BDCP may change operations, affects analysis based on this modeling</p>	<p>It appears that this comment was based on the MBK January 2014 review of BDCP modeling. The EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4.</p> <p>Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the BDCP EIR/EIS.</p> <p>The aggregate effect of the changed assumptions under MBK's modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the BDCP EIR/EIS.</p> <p>As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the long-term average Delta exports under Alternative 4 remain similar or increase compared to the No Action Alternative. With respect to the reference to the impact designation in the Draft BDCP EIR/EIS for WS-2, it was determined that no impact designations would be developed for Water Supply changes because the true impacts occur under other environmental resources. For example, increased surface water deliveries under Water Supply is assumed to result in less groundwater pumping and less effects on groundwater conditions.</p> <p>MBK's modeling compares the projected Delta exports under the No Action Alternative included in the BDCP EIR/EIS, which considers the effects of climate change and sea level rise, to a model run of No Action Alternative that does not include climate change and sea level rise effects, and includes different operational assumptions than the EIR/EIS.</p> <p>MBK's modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to EIR/EIS modeling. As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative.</p> <p>For additional information regarding greenhouse gas emissions and climate change, please see Master Response 19. For additional information regarding modeling, please see Master Response 30.</p>

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		may not produce reliable results and should be revised as improved modeling is developed.	
1722	207	[ATT 3: Memo dated 11/30/12 regarding Friant Water Authority Issues and Concerns with BDCP, from Jennifer T. Buckman, General Counsel at Friant Water Authority, to Donald R. Glaser, Regional Director of Mid-Pacific Region at Bureau of Reclamation.]	This comment describes an attachment to the comment letter. Please see responses to comments above.
1722	208	<p>[From ATT 3:]</p> <p>Since September 2010, the Board of Directors of the Friant Water Authority has been expressing its concerns about certain aspects of the BDCP project, particularly the changes in CVP operations and the cost allocations that other CVP contractors have discussed with us. As you know, some of the proponents of BDCP have deliberately excluded Friant from being at the table during critical negotiations for this project.</p>	The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S. Please see Master Response 40 for discussion of public outreach. Since 2006, the proposed has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholders and independent scientists, and more than 600 public meetings, working group meetings and stakeholder briefings.
1722	209	<p>[From ATT 3:]</p> <p>Friant Water Authority has been generally supportive of the project as a means for those who have lost water supplies to regulatory constraints to recover them. Of course, Friant has always noted that its supportive position may change, depending on what the BDCP proponents select as the features of the project.</p> <p>In recent months, the team working on BDCP has expended significant effort to define the project's features. As part of these efforts, Dr. David Sunding, an economist under contract with the State of California to analyze the BDCP cost issues, modeled the benefits that would accrue to various stakeholders under some of the BDCP alternatives being considered. Dr. Sunding presented his initial findings at a joint meeting of Friant's Policy and Legislative and Advisory Committees on August 10, 2012. (A copy of Dr. Sunding's power point is attached as Exhibit B. [not included]) The modeling looked at four categories of potential benefits from BDCP: (1) water supply reliability, (2) water quality, (3) regulatory certainty, and (4) protection against catastrophic failure of the existing Delta conveyance system.</p> <p>Unfortunately, the work that the BDCP proponents have shared with us to date has only served to confirm our fears that Friant will be asked to pay a disproportionate share of BDCP costs. Specifically, as set forth in more detail below and as we have summarized in several meetings with you over recent months, Friant obtains little, if any, benefit from BDCP. In fact, the project may actually be detrimental to Friant's water supply reliability.</p> <p>Under the "beneficiary pays" principle that the BDCP proponents affirm as the basis of the project, there is no legitimate justification for assigning Friant about \$2B of the project's anticipated \$14B price tag. While Friant supports BDCP and the efforts of certain water users to recoup supplies they have lost to regulatory restrictions, it cannot accept a disproportionate share of the cost burden.</p>	The comment addresses the economics of the project and does not raise any issues with the environmental analysis provided in the EIR/S. The water contractors benefitting from the proposed project and their constituents will bear all costs associated with constructing new conveyance facilities and mitigating for the impacts of those facilities. Expenditures of public money from other sources would be limited to restoration activities beyond those needed to mitigate the impacts of facility construction. An updated cost-benefit analysis will be prepared outside the CEQA/NEPA process. Please see Master Response 5 for more information on project costs and funding.
1722	210	<p>[From ATT 3:]</p> <p>BDCP's modeling results, analyzed in the context of existing law, confirm that the project offers little to no benefit to Friant Water Authority:</p> <p>BDCP's modeling demonstrates that the project reduces Friant's water supply reliability as compared to existing conditions. [Footnote 1] The modeling also shows that BDCP provides no significant water quality improvement to CVP agricultural water users such as Friant.</p>	The EIR/EIS analysis assumes no changes in operational criteria for Millerton Lake. As noted in the Chapter 5 of the Draft BDCP EIR/EIS, modeling of Alternatives includes assumptions of the projected climate change and sea level rise effects at 2060. The changes in the reliability of the Friant's water supply is driven by these assumed changes in the climate and not a result of the BDCP EIR/EIS Alternatives. The modeling shows that changes in climate and sea level could result in lower levels in SWP and CVP reservoirs upstream of the Delta even without BDCP alternatives. The lower reservoir levels presented in the CALSIM II model results in the

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		<p>BDCP's model has assumed regulatory certainty through issuance of an HCP (Habitat Conservation Plan), but the project does not appear to meet the ESA (Endangered Species Act) standards for an HCP. Finally, BDCP's modeling reveals that the project offers Friant only some unquantified "insurance" protection against a catastrophic Delta failure that temporarily shuts off all SWP and CVP diversions.</p> <p>[Footnote 1: Consistent with CEQA, the BDCP modeling has appropriately measured the impacts of the proposed project against the "status quo" baseline of existing physical conditions. As we have discussed, the BDCP is a proposed joint federal and state project. As such, it is subject to both the National Environmental Policy Act and the more rigorous standards of the California Environmental Quality Act. For purposes of CEQA, the project's environmental impacts normally must be analyzed against the existing physical environmental conditions. See 14 C.C.R. [Section] 15125(a); Communities for a Better Environment v. South Coast Air Quality Management Dist., 48 Cal. 4th 310, 327-28 (2010) (lead agency abused its discretion in analyzing the impacts of the project based on a hypothetical future baseline of full capacity under a permit, when the existing physical conditions did not include full use as authorized by the previously issued permit).]</p>	<p>EIR/EIS are based on modeled SWP and CVP water operations under current regulations and future demand assumptions. In addition, CALSIM II cannot make decisions that occur in real-time, such as drought operations during the ongoing drought. Instead the model includes operating criteria per the current regulations for all dry periods, and does not reflect specific relaxations that could occur in drought conditions.</p> <p>The EIR/EIS analysis conveys all water deliveries to the San Joaquin River Exchange Contractors through the Delta; and water deliveries from Millerton Lake would be similar under the No Action Alternative and all action alternatives. However, it is recognized that during extreme droughts, water can be delivered to the San Joaquin River Exchange Contractors from Millerton Lake and CVP water contract deliveries to users along the Friant and Madera canals can be reduced. Water rights delivered to Friant-Kern Water Authority members that are senior to the water rights held by DWR and Reclamation would be delivered in the same manner and volume under the No Action Alternative and all action alternatives.</p>
1722	211	<p>[From ATT 3:]</p> <p>In Westlands VII, the Ninth Circuit affirmed the district court's findings that the Exchange Contractors hold senior water rights that are both riparian and pre-1914 appropriative, and, "under section 8 of the Reclamation Act of 1902 (43 U.S.C. [Section] 383), the Bureau of Reclamation is required to comply with state law in acquiring water rights for the diversion and storage of water by the CVP." The Ninth Circuit concluded "both Westlands and the Bureau understood that prior vested rights had priority over Westlands' water allocations." Westlands VII, 337 F.3d at 1102. The Ninth Circuit expressly held that the Exchange Contractors' substitute supply "is a vested priority obligation the Bureau must satisfy without including it in CVP available supply." Westlands VII, 337 F.3d at 1104.</p> <p>We (Friant Water Authority) are informed that representatives of Westlands have claimed that the priority given the Exchange Contractors' Delta water supply merely represents a "policy decision" of Bureau of Reclamation. In the context of the San Luis permit and the Friant Division permit, these statements are flatly inaccurate. As the courts have previously held in rejecting Westlands' claims, Reclamation must comply with state law in its water diversions, and the state water rights permits issued for the San Luis Unit require honoring the Exchange Contractors' priority of water diverted from the Delta. Westlands VII, 337 F.3d at 1101 ("Under section 8 of the Reclamation Act of 1902, (43 U.S.C. [Section] 383), the Bureau is required to comply with state law in acquiring water rights for the diversion and storage of water by the CVP."), 1102 (San Luis permit is 'subject to vested rights', which have priority over Westlands' water allocations), 1103 ("the Exchange Contractors' water allocation has priority over the Westlands water service contract"). While the San Luis Unit CVP contracts do not specifically mention the priority of the Exchange Contractors' substitute Delta water supply, this fact is irrelevant because: (1) the contracts can only authorize the delivery of water that Reclamation has a legal right to divert, and (2) the underlying water rights permits do expressly incorporate the senior priority by requiring Reclamation to honor "prior vested rights."</p> <p>In other cases, some water users have sought to establish a senior priority for west side contractors as compared to other contractors who also take water under the San Luis permit. In San Luis Unit Food Producers, for example, irrigators who receive water from the</p>	<p>The comment addresses the commenter's water rights and the water rights of other CVP contractors and does not raise any issues with the environmental analysis provided in the EIR/S. The proposed project does not reduce the protections afforded existing water right holders or change their contract rights. The CALSIM II model delivers water to senior water rights holders, including San Joaquin River Exchange Contractors, prior to allocating water to CVP water service contractors. The EIR/EIS analysis conveys all water deliveries to the San Joaquin River Exchange Contractors through the Delta; and water deliveries from Millerton Lake would be similar under the No Action Alternative and all action alternatives. However, it is recognized that during extreme droughts, water can be delivered to the San Joaquin River Exchange Contractors from Millerton Lake and CVP water contract deliveries to users along the Friant and Madera canals can be reduced. Water rights delivered to Friant-Kern Water Authority members that are senior to the water rights held by DWR and Reclamation would be delivered in the same manner and volume under the No Action Alternative and all action alternatives.</p>

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		<p>San Luis Unit argued (among many other things) that Section 1(a) of the San Luis Act directs Reclamation to provide water to particular users in particular amounts. The District Court rejected this argument, noting that it had previously been presented and rejected in <i>Westlands Water District v. United States</i>, 805 F. Supp. 1503, 1508 (E.D. Cal. 1992) ("Westlands I"), <i>aff'd sub nom. Westlands Water Dist. v. Firebaugh Canal Co.</i>, 10 F.3d 667 (9th Cir. 1993) ("Westlands II"):</p> <p>"Read as a whole, section 1(a) [of the San Luis Act] does not assign exclusive water rights to any party.... Rather, it is a reaffirmation of Congress's consistent treatment of the CVP as an expanding, coordinated water delivery system. The San Luis Act, along with other reclamation acts, explicitly gives the Bureau the authority to manage the CVP. Section 1(a) explains how the San Luis Unit fits into that system. The section imposes no limit on the Bureau's discretion to make water management decisions in the interests of an integrated water project."</p> <p><i>San Luis Unit Food Producers v. United States</i>, 772 F. Supp. 2d 1210, 1242 n. 9 (E.D. Cal. 2011), citing <i>Westlands I</i>, 805 F. Supp. at 1508.</p> <p><i>Westlands I</i> does not hold that Reclamation has absolute discretion to make water management decisions in the interests of an integrated CVP water project. Neither <i>Westlands I</i> nor any of the subsequent six decisions in that litigation can be stretched that far. Rather, <i>Westlands I</i> and <i>Westlands II</i> simply stand for the proposition that Section 1(a) of the San Luis Act does not constrain Reclamation's discretion to make water management decisions that have the effect of reducing the water supplies of San Luis Unit contractors. It does not follow that Reclamation has unfettered discretion in its CVP operations. Rather, Reclamation remains bound by all other applicable laws -- including Section 8 of the Reclamation Act of 1902, applicable California water rights law, and the terms of the Friant Division permit, as interpreted by the Ninth Circuit in <i>Westlands VII</i>. [Footnote 5: The federal court's judgment interpreting this matter of California water rights permits and priorities is final and binding on all the parties, including Reclamation. The SWRCB and the courts have concurrent jurisdiction over California water rights matters. <i>National Audubon Soc'y v. Superior Court</i>, 33 Cal.3d 419, 426 (1983). In <i>Natural Resources Defense Council v. Rodgers</i>, the SWRCB acknowledged that this power extends to federal courts as well as California courts.] These legal mandates constrain Reclamation's discretion and render it unable to disregard the Exchange Contractors' senior priority to Delta water supplies.</p> <p>The Ninth Circuit's 2003 <i>Westlands VII</i> decision resulted in a final judgment that continues to bind all the affected parties, including <i>Westlands</i>, <i>Friant</i>, the Exchange Contractors, and Reclamation. Reclamation can only deliver water as authorized by its permits. Since the San Luis Unit permit expressly establishes the Exchange Contractors' senior priority to their substitute Delta supply, the Exchange Contractors' rights under the <i>Friant</i> Division permit are "first in time, first in right." Under this well-established principle, in times of shortages, junior water users' supplies are reduced before senior water users' rights are curtailed: "As between appropriators ..., the one first in time is first in right, and a prior appropriator is entitled to all the water he needs, up to the amount he has taken in the past, before a subsequent appropriator may take any." <i>City of Barstow v. Mojave Water Agency</i>, 23 Cal.4th 1224, 1241 (2000). In other words, when there is not sufficient Delta water available to serve all users, the "first in time, first in right" principle mandates that the Exchange Contractors' senior water supply is served first, and no junior water user can receive any water until this senior demand is satisfied.</p>	

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		<p>To avoid this result, some south of Delta CVP contractors have suggested that Reclamation could fulfill part or all of the Exchange Contractors' demand from the Friant Division's San Joaquin River supplies rather than the substitute Delta supply. There is no basis for these attempts to resurrect the points that Westlands VII already decided: the San Luis Unit permit is conditioned on fulfillment of prior vested rights, including the Friant Division permit. If part of the Exchange Contractors' supply were taken from the Friant Division supplies, the Friant contractors' supplies would necessarily be reduced by that same amount. California law does not permit shorting senior water users merely to reduce the impact that the junior water users would otherwise suffer. "Case law simply does not support applying an equitable apportionment to water use claims unless all claimants have correlative rights [C]ases ... require that courts making water allocations adequately consider and reflect the priority of water rights...." City of Barstow, 23 Cal. 4th at 1247 (disapproving City of Los Angeles v. City of San Fernando, 14 Cal. 3rd 199, 265-66 n. 61 (1975) to the extent that it "could be understood to allow a court to completely disregard California landowners' water priorities"). [Footnote 6: Although some have suggested that the public trust doctrine allows equitable reduction of all water rights to address the needs of Delta fisheries, El Dorado Irrig. Dist. v. State Water Resources Control Bd., 142 Cal. App. 4th 937 (2006), confirms that the public trust doctrine only authorizes the disregard of water rights priorities in specific, limited circumstances, such as when adherence to existing priorities would itself violate the public trust. In contrast, where, as here, the best available evidence suggests that the needs of the fish can be met by curtailing the diversions of the junior water users, that is the result compelled by California law. These parameters of the public trust doctrine will be addressed in more detail in a separate memorandum that we are currently preparing for you.] Reclamation would violate the terms of the San Luis Unit permit if it delivered any water to the San Luis Unit before the Friant Division water rights, including the substitute Delta supply for the Exchange Contractors, had been fully satisfied. Disregarding the senior priority of the Friant Division water rights permit would not be consistent with California law or Section 8 of the Reclamation Act of 1902, and were Reclamation to attempt such an action, of course Friant would be forced to defend its legal rights.</p> <p>Furthermore, Reclamation would violate the terms of the Friant Division repayment contracts by fulfilling part or all of the Exchange Contractors' demand from the Friant Division's San Joaquin River, unless Reclamation is unable to deliver Delta water under the terms of the Exchange Contract. Each of the Friant Division 9(d) repayment contracts contains the following language in Article 3(n):</p> <p>"The rights of the Contractor under this Contract are subject to the terms of the contract for exchange of waters, dated July 27, 1939, between the United States and the San Joaquin and Kings River Canal and Irrigation Company, Incorporated, et al., (hereinafter referred to as the Exchange Contractors), Contract No. Ilr-1144, as amended. The United States agrees that it will not deliver to the Exchange Contractors thereunder waters of the San Joaquin River unless and until required by the terms of said contract, and the United States further agrees that it will not voluntarily and knowingly determine itself unable to deliver to the Exchange Contractors entitled thereto from water that is available or that may become available to it from the Sacramento River and its tributaries or the Sacramento-San Joaquin Delta those quantities required to satisfy the obligations of the United States under said Exchange Contract and under Schedule 2 of the Contract for Purchase of Miller and Lux Water Rights (Contract I1r-1145, dated July 27, 1939)."</p> <p>This contractual language plainly prohibits Reclamation from serving the Exchange</p>	

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		<p>Contractors from the San Joaquin River, except as authorized under the terms of the Exchange Contract itself.</p> <p>To the extent the BDCP modeling may assume that Reclamation will change CVP operations so they no longer respect the senior Friant Division water rights, those assumptions are contrary to law and are therefore fatally flawed. To honor its obligation to operate the CVP consistent with California water law, Reclamation must accord senior priority to the water rights that were vested before the San Luis permit was issued, including the Friant Division permit and the Exchange Contractors' substitute Delta water supply.</p>	
1722	212	<p>[From ATT 3:]</p> <p>BDCP would injure Friant Water Authority by decreasing the CVP Delta diversions in dry years, increasing the likelihood that the exchange contractors will make a call on Friant's San Joaquin River supplies:</p> <p>With respect to water supply reliability, the modeling results presented by Dr. Sunding show that the BDCP would actually leave Friant worse off than it would be under the status quo. This result is unacceptable to Friant, as it injures Friant's existing water users in violation of California Water Code section 1702. Id. ("Before permission to make [a change in the point of diversion] is granted the petitioner shall establish, to the satisfaction of the board, and it shall find, that the change will not operate to the injury of any legal user of the water involved."); see also Cal. Water Code [Sections] 1701.2(d), 1701.3(b)(1).</p> <p>For over 60 years, the Bureau of Reclamation has respected the Exchange Contractors' senior priority to the water diverted from the Delta. While other Delta exporters have experienced shortages as a result of pumping restrictions, the Exchange Contractors have never been shorted in more than six decades of CVP operations; one hundred percent of the time, they have obtained the full amount of substitute Delta water supply required under the Exchange Contract. [Footnote 7: As you know, hydrological conditions in some years have triggered the Critical Year provision of the Exchange Contract. In those years, under the terms of the Exchange Contract, the amount of Delta water supply required to be delivered to the Exchange Contractors is reduced from 840,000 acre-feet to 650,000 acre-feet. Thus, the Exchange Contractors have received less water in Critical Years. In every year of CVP operations, though, all of the substitute Delta water supply due to the Exchange Contractors has been delivered to them from the Delta.] Thus, under existing conditions, the senior water rights obtained under the Friant Division permit provide a highly reliable source for the Exchange Contractors' substitute Delta supply.</p> <p>Under the new pumping regime being modeled by BDCP, more water would be diverted from the Delta in wetter years, and diversions would be reduced in drier years. Slide 9 of Dr. Sunding's presentation shows the results to the State Water Contractors derived from modeling this potential change in operations. As compared to the status quo, in the driest 30-33% of water years, the modeling shows that the State Water Contractors would get less water under BDCP Alternative 4 than they do under the current regulatory regime. (All contractors would have gotten more water under Alternative 1A, but the BDCP proponents have agreed to remove this alternative from further consideration due to concerns about its environmental impacts.) According to the BDCP proponents, under BDCP, the State Water Contractors and the CVP contractors would each take an equal share of the water diverted and the costs. Thus, even though Dr. Sunding's presentation does not include modeling results for CVP contractors, the results for CVP contractors under the proposed BDCP operations would be the same as they are for State Water Contractors: less water in the</p>	<p>As shown in Appendix 5A, Section C of the Final EIR/EIS, the San Joaquin River Exchange Contractors would receive the same water deliveries under Existing Conditions, No Action Alternative, and Alternative 4A. The proposed project (Alternative 4A) would not increase risk to the Friant Unit water users. It also should be noted that the Delta exports conveyed through the Banks and Jones Pumping Plants would not necessarily be delivered in equal amounts to the SWP and CVP water deliveries. The actual deliveries are based upon available water supplies in the SWP and CVP individual projects and the ability to use the water during the time when the water can be conveyed across the Delta. For example, water available for the SWP may be different than for the CVP in any one year due to hydrology upstream of SWP and CVP reservoirs. In addition, the proposed project increases the amount of water that can be delivered in the wet years to be stored for use in drier periods. However, not all CVP water users located south of the Delta have access to large volumes of surface water or groundwater storage. Therefore, CVP water service contractors could have less available water in drier years as compared to the SWP water service contractors. However, the CALSIM II model is able to deliver full contract amounts to San Joaquin River Exchange Contracts in all years in the modeling analysis.</p> <p>Additionally, the proposed project does not seek any new water rights nor include any regulatory actions that would affect water rights holders other than DWR and Reclamation. DWR and the Bureau have filed for a change in point of diversion with SWRCB for the proposed project. The SWRCB has the responsibility to make legal injury determinations.</p>

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		<p>driest 30-33% of years, and more water in the wettest years.</p> <p>This means that BDCP increases the likelihood that a full Delta supply could not be delivered to the Exchange Contractors in the driest years, thereby increasing the likelihood that the Exchange Contractors would exercise their rights to San Joaquin River water that otherwise would be available to Friant. Thus, in the driest years, when Friant's water supply is most at risk, BDCP would exacerbate that risk.</p>	
1722	213	<p>[From ATT 3:]</p> <p>BDCP offers Friant Water Authority little to no water quality improvements:</p> <p>As shown in slide 20 of Dr. Sunding's August 10, 2012 presentation to Friant, BDCP's modeling shows that the project would have minimal benefit to CVP agricultural water users.</p> <p>Dr. Sunding previously estimated the present value of benefit to all CVP agricultural water users under BDCP Alternative 4 as \$68M -- which represents less than one-half of 1% of BDCP's projected \$14B cost. (We understand that Dr. Sunding's newly refined analysis now estimates this benefit at \$153M, but even this new figure, which is more than double the previous estimate, represents only 1% of BDCP's projected \$14B costs.) However, none of these benefits would accrue to Friant water users, since Friant Division contractors do not use any Delta water supplies. In other words, the modeling data seems to indicate that BDCP provides slight water quality benefits, but not for Friant.</p>	Please see also Master Response 14 for additional discussion of water quality.
1722	214	<p>[From ATT 3:]</p> <p>BDCP's ability to provide regulatory certainty is questionable because BDCP the applicants have not ensured adequate funding as required to obtain a Habitat Conservation Plan (HCP):</p> <p>The BDCP does not appear to meet the minimum statutory standards for issuance of an HCP. To approve an HCP application and conservation plan, the Secretary of the Interior must find, among other things, that "the applicant will ensure that adequate funding for the plan will be provided." 16 U.S.C. [Section] 1539(a)(2)(B)(iii). The funding assurance standard is not met where the applicants merely assume that another entity will participate and fund a portion of the costs of the plan. National Wildlife Fed'n v. Babbitt, 128 F. Supp. 2d 1274, 1295 (E.D. Cal. 2000) (openly questioning whether "a funding mechanism that is not backed by the applicant's guarantee could ever satisfy the requirement of [Section] 1539(a)(2)(B)(iii) that the applicant 'ensure' funding for the Plan"). Likewise, an HCP funding plan does not pass muster when it relies on third parties opting in to the Plan at some future time. Sierra Club v. Babbitt, 15 F. Supp. 2d 1274, 1282 (reliance on speculation as to funding from third parties is arbitrary and capricious); National Wildlife Fed'n v. Babbitt, 128 F. Supp. 2d 1274, 1295 (E.D. Cal. 2000). Likewise, an applicant's assurance of adequate HCP funding is not legally sufficient when it relies upon undependable and speculative sources for the necessary funds. National Wildlife Fed'n v. Babbitt, 128 F. Supp. 2d 1274, 1295. For these reasons, HCP funding plans that rely on unproven future actions, such as a proposed bond issue requiring voter approval or a sales tax measure or fee that has not been enacted, do not meet the statutory standard. Southwest Ctr.for Biological Diversity v. Bartel, 470 F. Supp. 2d 1118, 1156 (S.D. Cal. 2006). As the court explained in Sierra Club v. Babbitt, 15 F. Supp. 2d 1274, 1282 (S.D. Ala. 1998):</p> <p>"[T]he FWS's speculative reliance on other unnamed sources to contribute funds to make up</p>	The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S. The water contractors benefitting from the proposed project and their constituents will bear all costs associated with constructing new conveyance facilities and mitigating for the impacts of those facilities. Expenditures of public money from other sources would be limited to restoration activities beyond those needed to mitigate the impacts of facility construction. An updated cost-benefit analysis will be prepared outside of the CEQA/NEPA process. Please see Master Response 5 for more information on project costs and funding.

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		<p>for the inadequacy of the amounts of offsite mitigation funding required is simply contrary to the law and unsupported by any factually reliable basis in the Administrative Record. . . . Because the Administrative Record does not establish what level of funding has been offered by "other sources," the FWS cannot demonstrate any basis in the Administrative Record upon which the level or amount of offsite mitigation measures are "to the maximum extent practicable."</p> <p>"Moreover, the law establishes that the FWS cannot comply with the strict ESA mandate that the HCP "minimize and mitigate" the effects of the projects to the "maximum extent practicable" simply by relying on speculative future actions by others. Cf. Sierra Club v. Marsh, 816 F.2d 1376 (9th Cir. 1987) (action agency cannot "insure" project will not jeopardize species based on promise of future mitigation measures); NWF v. Coleman, 529 F.2d 359 (5th Cir. 1976), cert. denied, 429 U.S. 979 (proposed actions by others does not "insure" that agency's actions will not cause jeopardy); Southwest Center for Biological Diversity v. Babbitt, 939 F. Supp. 49 (D.C. 1996) (FWS's reliance on future actions by Forest Service does not comport with the language of statute that FWS base its listing decisions on "existing" regulatory mechanisms)."</p> <p>The CVP contractors who are applicants for the BDCP have not identified any means of ensuring that they will provide adequate funding for the Plan. The proponents of the BDCP have proposed that the costs of the plan be split between the CVP and the State Water Project based on the amount of water each project will receive from the BDCP. However, the CVP contractors who will reap most of the benefits of BDCP have indicated to us that they are not able to afford to cover the CVP's share of the costs of the BDCP. To spread these costs, one of these applicants, Westlands, has suggested that the CVP cost-share be allocated to additional CVP contractors, including Friant. [Footnote 9] BDCP proponents have also suggested to us that they would make up funding deficits through a bond issue or by having the SWRCB impose fees on all water rights holders.</p> <p>Friant Water Authority is not an applicant for BDCP. Likewise, no federal agency can be one of the primary applicants for BDCP. See, e.g., HCP Handbook, p. 3-1. Thus, neither Friant nor any federal agency can be used to backstop the CVP applicants' lack of adequate funding, because this would not satisfy the statutory mandate that "the applicant ... ensure that adequate funding for the plan will be provided." See 16 U.S.C. [Section] 1539(a)(2)(B)(iii). [Footnote 10] The BDCP proponents cannot simply assume that a share of the costs will be borne by non-applicants such as Friant; this type of speculation does not satisfy the statutory prerequisites to obtain an HCP.</p> <p>[Footnote 9: Some have suggested that Reclamation would be able to pass through costs to CVP contractors such as Friant, even over their objection, merely by amending the rate-setting policy. We are unaware of any legal basis to support such assertions. The rate-setting policy is a regulation that has been adopted pursuant to federal law to implement certain statutory requirements. It is a fundamental principle of administrative law that regulations must be consistent with their authorizing legislation. Here, there is no existing legislation that authorizes costs of this magnitude and scope for BDCP. To the contrary, all existing federal legislation authorizes studies to determine whether BDCP is a viable project. Absent any federal legislation authorizing this \$148 project, we do not believe there is any legitimate legal means of forcing these costs on unwilling CVP contractors through a unilateral change in the rate-setting policy -- particularly when BDCP's own modeling confirms that these CVP contractors stand to gain very little, if anything, from</p>	

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		<p>the project.]</p> <p>[Footnote 10: Many of Friant's member districts cannot incur additional bonded indebtedness. As you are well aware, the Friant districts have already incurred significant bonded indebtedness in order to finance the repayment of their CVP capital repayment obligations, to assure a funding stream for the San Joaquin River Restoration Program. To obtain this financing, many of the Friant districts entered into agreements that preclude them from issuing additional bonded indebtedness.]</p>	
1722	215	<p>[From ATT 3:]</p> <p>BDCP is proposed as a habitat conservation plan pursuant to Section 10 of the federal Endangered Species Act, 16 U.S.C. [Sections] 1531, et seq. See, e.g., Cal. Water Code [Section] 85320. Normally, HCP permittees obtain regulatory certainty through application of the "No Surprises" policy. Under "No Surprises," with certain designated exceptions, the agencies issuing the HCP agree that they will not require the permittees to provide additional mitigation in the form of additional land, water, or money; the permittees' mitigation obligations are capped at the amount specified in the HCP. We (Friant Water Authority) understand that the permitting agencies recently have determined that the scientific data do not support application of the "No Surprises" policy to the BDCP. Given this, it is unclear to us how any of the BDCP permittees will gain the benefit of regulatory certainty. [Footnote 8: Even if the state contractors are able to overcome this preliminary determination with more specific scientific data, it is still doubtful whether the benefits of the "No Surprises" policy could be extended to the federal contractors. Section 10's "No Surprises" assurances are not available to federal agencies such as Reclamation, which means that Reclamation's CVP operations will continue to be subject to a Biological Opinion, and the federal water contractors' only legal basis for receiving this water derives from Reclamation's permits and will necessarily be subject to the terms of any applicable Biological Opinion.]</p>	<p>The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S.</p> <p>The preferred alternative no longer includes the BDCP or an NCCP, so an IA is no longer required. However, public comments received on the draft IA will help inform changes that may be made to the agreement in the event that an alternative is selected that includes BDCP or a similar NCCP. For information about the implementation structure of the Preferred Alternative, see Master Response 5 concerning the BDCP.</p> <p>See Master Response 4 for additional information on alternatives development.</p>
1722	216	<p>[From ATT 3:]</p> <p>BDCP would offer Friant Water Authority some limited protection from a catastrophic Delta failure:</p> <p>Friant acknowledges that the BDCP could provide it some benefit related to protection against catastrophic failure of the existing Delta conveyance system. Obviously, a catastrophic failure of the Delta conveyance system might render it impossible to divert any water from the Delta, so that Reclamation would not be able to deliver the substitute Delta supply to the Exchange Contractors during the period of the facilities outage. Should that occur, the Exchange Contractors can exercise their rights to take the water from the San Joaquin River, which would necessarily diminish Friant's supply. Insurance against this type of call on the Friant Division water has some value to Friant. However, the value of this insurance is somewhat limited because even a catastrophic failure would be temporary in duration, and many Friant Division districts have groundwater supplies that they can use to help them get through a temporary period of shortage. Friant is willing to meet with BDCP proponents to discuss its views on the scope and extent of this potential benefit.</p>	<p>The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S. The proposed project does not purport to protect existing levees from seismic ground shaking. Although the proposed project is not intended to provide enhanced flood protection, it does intend to reduce the vulnerability of the water delivery system by making it less reliant upon the Delta levee system (and associated risks thereto). Further, the proposed project does not envision a change in the state's flood protection policies or programs. For more information on levee stability and seismic risk please see Master Response 16.</p>
1722	217	<p>[From ATT 3:]</p> <p>Under the "Beneficiary Pays" Principle, Friant Water Authority's share of the costs should be</p>	<p>See response to comment 1722-214.</p>

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		<p>proportionate to the benefits it receives:</p> <p>BDCP's proponents have long espoused the "beneficiary pays" principle and claimed that the project's cost allocation will be consistent with this principle. BDCP's "beneficiary pays" principle has its genesis in CALFED, the ROD (Record of Decision) for which states, "a fundamental philosophy of the CALFED Program is that costs should, to the extent possible, be paid by the beneficiaries of the program actions." CALFED Bay-Delta Program Programmatic Record of Decision, p. 34 (August 28, 2000) (relevant excerpts attached as Exhibit F [not included]). However, as the California Legislative Analyst's Office (LAO) noted on page 2 of its February 2004 "Analysis of the 2004-05 Budget Bill", "The [CALFED] ROD ... provides few details as to how this principle would be implemented." [Footnote 11] (The LAO's 2004 Analysis is attached as Exhibit G. [not included]) Unfortunately, in the six years since CALFED was reorganized and BDCP succeeded to some of the CALFED vision, BDCP has made little to no progress on defining its proposal for implementing this fundamental concept.</p> <p>Luckily, though, there is a wealth of California authority to help BDCP navigate the "beneficiary pays" concept. This principle is well-established in California, having been defined in cases considering the costs that can be charged as special assessments to benefited properties and the "fair-share" contributions that can be imposed as development impact fees. [Footnote 12]</p> <p>The "beneficiary pays" principle limits a beneficiary's financial contribution to the proportionate share of the benefits it receives. For example, in the context of special assessment districts, the principle is stated as follows: "No assessment shall be imposed on any parcel which exceeds the reasonable costs of the proportional special benefit conferred on that parcel." Cal. Const., Art. XIII D, [Section] 4(a). In this context, "beneficiary pays" means that no assessment can be imposed unless a special benefit has been conferred on that particular property. <i>Golden Hill v. City of San Diego</i>, 199 Cal. App. 4th 416, 422, 423 (2011); see also <i>Beutz v. County of Riverside</i>, 184 Cal. App. 4th 1516, 1522 (2010). In other words, if the project does not benefit an entity, that entity cannot be charged for it. A necessary corollary is that the cost of the special assessment must be proportional to, and not exceed, the value of the special benefits conferred. "The special benefit and proportionality requirements are perhaps best understood as being interrelated, not separate, requirements. The proportionality requirement ensures that the aggregate assessment imposed on all parcels is distributed among all assessed parcels in proportion to the special benefit conferred on each parcel." <i>Beutz</i>, 184 Cal. App. 4th 1516, 1522. Thus, the "beneficiary pays" principle limits the amount of the costs imposed to the proportion of benefit received.</p> <p>The "beneficiary pays" principle has also been defined in the context of fair-share calculations for development impact fees, and the validity of using the framework of these types of fees to define CALFED's "beneficiary pays" principle has already been recognized. See letter from Sen. Barbara Boxer to Lester Snow, Director of the California Department of Water Resources, p. 2 (September 29, 1999) (posing the question "Consistent with the 'beneficiary pays' principle, what has CALFED done to refine and implement a broad set of impact-based mitigation fees?") (Exhibit H [not included]). Under California's Mitigation Fee Act and the California Environmental Quality Act, the project proponent can be required to pay fees that represent its proportionate share of an impact to infrastructure -- that is, the extent to which the project will benefit from new infrastructure. The California Supreme Court has stated that a project proponent's share of impact fees should be "roughly</p>	

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		<p>proportional" to the impacts caused by its actions and that a project developer "need not pay to mitigate effects caused by other[s]." City of Marina v. Board of Trustees of California State University, 39 Cal. 4th 341, 362, 361 (2006); Tracy First v. City of Tracy, 177 Cal. App. 4th 912, 937 (2009). [Footnote 13] For example, if a project includes 1500 homes that will increase traffic at a nearby intersection by 25%, the project proponent may be required to pay fair-share fees amounting to 25% of the cost of the traffic infrastructure improvements necessitated by the addition of the traffic from the project. However, the project proponent cannot be charged a fee simply because the city's existing street system is over-capacity and the intersection is already overwhelmed. The "fair-share" or "beneficiary pays" principle does not require a project proponent to fix problems created by others. The developer's contribution is limited to the impacts caused and the benefits received by its project; a developer cannot be forced to pay fees to build infrastructure that will benefit others.</p> <p>To meet the fair-share standard, there must be, at a minimum, a reasonable relationship between the amount of the fee and "the deleterious public impact of the development." Building Industry Ass'n of Central California v. City of Patterson, 171 Cal. App. 4th 886, 897-98 (2009). [Footnote 14] Consequently, a fair-share fee must specify the percentage of current and future improvements for which the developer paying the fee would be responsible. Anderson First Coalition v. City of Anderson, 130 Cal. App. 4th 1173, 1188, 1189 (2005). A fee for a project's impacts on affordable housing did not meet the "reasonably related" standard when it was based on the amount of affordable housing the jurisdiction needed to provide, rather than the actual affordable housing impacts caused by the project. Building Industry Ass'n, 171 Cal. App. 4th at 899.</p> <p>The LAO has also suggested that California's "reasonably proportional" standard should be applied to define the "beneficiary pays" principle in the context of CALFED. In 2004, the LAO recommended that the California Legislature enact legislation to provide a framework for the application of the "beneficiary pays" principle for CALFED. The LAO stated that the framework should be "guided by principles of fairness and administrative simplicity" and then went on to specify: "By fairness, we mean that costs imposed on beneficiaries should be reasonably proportional to the benefit received by them." LAO, "Analysis of the 2004-05 Budget Bill" (February 2004), Exhibit G [not included], p. 8. Since BDCP is an outgrowth of CALFED, the LAO's recommendation -- to define "beneficiary pays" to mean that costs imposed on beneficiaries should be reasonably commensurate with benefits received -- applies with equal force to BDCP.</p> <p>Here, at least one of the BDCP proponents, Westlands, has assumed in official documents that the costs of BDCP will be spread equally amongst all contractors based on the amount of Delta water received, regardless of the actual benefits accruing to any Delta water user from the BDCP project. Official Statement, \$77,000,000 Westlands Water District Refunding Revenue Bonds, Series 2012A (September 1, 2012), p. 35 ("assuming that all state and CVP water delivered south of the Delta share [sic] proportionately in the cost of the DHCCP on a per acre-foot basis") (attached as Exhibit J [not included]). But, as shown above, BDCP does not make Friant's water supplies any more reliable, nor does it offer Friant any other significant tangible benefits. Westlands' proposal is exactly the type of cost-spreading arrangement that the Building Industry Ass'n case found violated the "reasonably related" standard. Westlands' proposed per-acre-foot cost allocation would undoubtedly make the BDCP project more affordable to SLDMWA members such as Westlands, but the cost is utterly divorced from any relationship to the benefits provided by BDCP. Therefore, it does not represent any water user's "fair-share" of the BDCP project, and it does not satisfy the</p>	

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		<p>"beneficiary pays" principle as articulated in California law.</p> <p>[Footnote 11: Failure to resolve this important issue has plagued CALFED and its successor projects for more than 12 years. See letter from Sen. Barbara Boxer to Lester Snow, Director of the California Department of Water Resources (September 29, 1999), p. 2 (asking, among other things, "What steps has CALFED taken to identify those who would benefit from specific water management tools and to determine their willingness to pay?"). (A copy of Sen. Boxer's letter is attached as Exhibit H.) In 2006, when Sen. Mike Machado asked why Governor Schwarzenegger's proposed water bonds did not define "beneficiary pays," the Governor's administration responded, in part, "The Administration does not see the value in further attempting to define this often divisive term." California Senate Committee on Natural Resources and Water, Analysis of SB 34 (2007-08 Regular Session, April 7, 2007 version),</p> <p>p. 2 (attached as Exhibit I).]</p> <p>[Footnote 12: We understand that the BDCP will be constructed and owned by the State of California, with an agreement between the federal government and the state spelling out the circumstances under which the federal government uses and pays for the facilities. Since the facilities will be state-owned, we have focused on the California authorities defining the "beneficiary pays" principle, though we believe similar results would be obtained under analogous provisions of federal law.]</p> <p>[Footnote 13: Fees that exceed the reasonable cost of providing the regulatory activity or service for which they are charged are vulnerable to attack as they may constitute improper "special taxes." See Cal. Gov. Code [Section] 50076.]</p> <p>[Footnote 14: The "reasonable relationship" test applies to legislatively imposed fees of general applicability. An ad hoc exaction or fee is subject to the more rigorous Nollan/Dolan/Ehrlich "essential nexus" and "rough proportionality" test. Building Industry Ass'n., 171 Cal. App. 4th at 897.]</p>	
1722	218	<p>[From ATT 3:]</p> <p>Since the benefits Friant Water Authority would receive from BDCP are very limited, allocating Friant 14-20% of the total project cost -- \$2B or more -- is wholly unwarranted:</p> <p>According to the last available (2010) cost estimate, the BDCP project may cost as much as \$14.2 billion. (Since that time, the preferred project alternative has been revised significantly, and a new cost estimate for this alternative has not yet been completed. However, it is anticipated that the costs for the preferred alternative will remain in the \$12-\$14B range.)</p> <p>Friant pays the cost of delivering the substitute Delta supply to the Exchange Contractors and the Settlement Contractors on the San Joaquin River system. Under the per-acre-foot-delivered cost allocation being urged by Westlands Water District, Friant would be charged for 884,000 acre-feet, the amount of the substitute Delta water supply. Assuming average annual deliveries of 6,000,000 acre-feet of water from the Delta, 884,000 acre-feet represents 14.7% of the total. (As the total amount of water delivered decreases, Friant's percentage share increases because of the seniority of its water rights.) Thus, Westlands' proposal results in assigning Friant 14.7% of \$14B, or \$2.05B. At the farm level, this could equate to a water rate increase of about \$150 per acre-foot, depending on the</p>	See response to comment 1722-214.

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		means of financing. These charges would more than triple water costs to individual Friant farmers without providing any commensurate water supply benefits.	
1722	219	<p>[From ATT 3:]</p> <p>Friant Water Authority supports the BDCP project as a means for other water users to recoup reliability for their water supplies. However, Friant cannot support, and will be forced to object, to any proposal to allocate costs to Friant that are disproportionate to the very limited benefits Friant could receive from the BDCP. As noted above, the BDCP proponents have modeled the anticipated four categories of benefits from the project: water supply reliability, water quality improvement, regulatory assurances, and protection against catastrophic failure of the Delta conveyance system. However, BDCP will decrease Friant's water supply reliability, will fail to improve water quality for Friant Division contractors, and does not appear to be able to achieve regulatory assurances. While the BDCP will offer Friant some protection against a catastrophic failure of the Delta conveyance system, this benefit is limited in both duration and scope.</p> <p>Notwithstanding the BDCP's benefits analysis, Westlands Water District has suggested that "all state and CVP water delivered south of the Delta share proportionately in the cost of the DHCCP (Delta Habitat Conservation and Conveyance Program) on a per acre-foot basis." Official Statement, \$77,000,000 Westlands Water District Refunding Revenue Bonds, Series 2012A (September 1, 2012), Exhibit J [not included], p. 35. If this means that Friant is charged for the substitute water supply delivered to the Exchange Contractors and the San Joaquin River Settlement Contractors, the proposed cost allocation violates the beneficiary pays principle. Applying this proposal would result in allocating approximately \$2B (or more) of BDCP's estimated \$14B cost to Friant, when BDCP's own modeling confirms that the project provides very little benefits to Friant -- and in fact decreases the reliability of Friant's water supplies. Friant cannot accept a cost allocation that assigns it a share that far exceeds the value of BDCP's minor benefits to Friant contractors.</p>	The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S. See response to comment 1722-214 regarding funding and 1722-216 on Delta levee stability.
1722	220	<p>[From ATT 3:]</p> <p>Friant Water Authority finds itself in a position of agreeing with many of the points made by the Regional Water Authority in its February 14, 2005 letter objecting to CALFED cost allocation proposal put forth by the California Bay Delta Authority staff:</p> <p>"The "beneficiary pays" principle is fundamental to the Record of Decision and RWA and its members strongly support it. The [Bay-Delta] Authority staffs current funding proposals violate this principle in two ways. First, the proposed Ecosystem Restoration Program fees are not linked to any identified benefits to be provided to the targeted water users. In particular, upstream water users located in the "solution area" have been targeted to pay those fees even though the CALFED program provides them no regulatory assurances. Second, the proposed state surcharge proposes water-user payments to replace State General Fund or bond contributions without identifying any specific benefits to be provided to the water users.</p> <p>"Rather than pursuing these departures from the crucial "beneficiary pays" principle, the [Bay-Delta] Authority should conduct public hearings to identify specific projects with specific beneficiaries. As RWA's experience shows, stakeholders will participate financially in projects when their benefits are clearly demonstrated. The [Bay-Delta] Authority must use a similar and transparent approach in developing any water-user fees.</p>	The comment addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/S. See response to comment 1722-214 regarding funding.

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		<p>"If the [Bay-Delta] Authority cannot identify its projects' specific benefits and beneficiaries and also obtains only limited federal or state funding, then it must reassess its program's scope and schedule in light of these constraints.... The state's and federal government's fiscal constraints would not justify the Authority in decoupling water users' contributions from specifically identified benefits to those water users. Such an action instead would contradict the Record of Decision fundamentally."</p> <p>Letter from Edward D. Winkler, Executive Director, Regional Water Authority, to Gary Hunt, Chair, California Bay-Delta Authority (February 14, 2005), pp. 1-2 (attached as Exhibit K [not included]).</p> <p>Of course, the Bay-Delta Authority no longer exists, and the BDCP has succeeded to some of the CALFED vision for resolving California's water conflicts. However, the Regional Water Authority's arguments apply with equal force to BDCP's attempts to formulate a definition of the "beneficiary pays" principle. Moreover, the same cost issue that plagued CALFED continues to haunt the BDCP as it struggles with this principle: the program is simply too costly for its expenses to be borne solely by its beneficiaries in proportion to the benefits they will receive.</p> <p>Friant respectfully suggests that the BDCP decision-makers should resist those who urge them to redefine the "beneficiary pays" principle in some unprecedented fashion, or to allocate minor beneficiaries a disproportionate share of the project costs. Instead, if Reclamation, the State of California, and the project's true beneficiaries all feel that this is a worthy project that should be pursued, the funding gap should be addressed by revisiting and increasing the public share, perhaps along the lines of what was suggested by the LAO (Legislative Analyst's Office) in 2004 for CALFED's Environmental Water Account (EWA).</p> <p>Noting that EWA, like many of CALFED's activities, has shared public-private benefits, the LAO suggested that, for those activities, "the activity should be funded by a combination of general-purpose funds and user fees" imposed on the direct beneficiaries. The LAO reasoned: "Because of the very nature of shared benefits, it is difficult to separate out and quantify with precision the benefit to the private beneficiaries. However, this should not mean that the private beneficiaries are absolved from any responsibility for sharing in the costs for activities from which they directly benefit." LAO, "Analysis of the 2004-05 Budget Bill" (February 2004), Exhibit G, p. 9. The LAO then identified the EWA as "a good candidate for this 'shared benefits'" approach because of its two primary objectives: (1) to minimize reductions in water deliveries from the state and federal water projects (or compensate water users for such reductions) and (2) to enhance endangered species protection and recovery. Id. The LAO suggested that "water users should pay for at least some of the program's costs because they clearly benefit from EWA to the extent it makes water supplies more reliable." Id. On the other hand, the LAO reasoned "it is appropriate for the program's costs to be shared with the public-at- large given the benefits to endangered species protection and recovery." Id.</p> <p>BDCP has the same two objectives as EWA did. Therefore, the LAO's analysis applies with equal force to the BDCP cost allocation. Under this model, water users should pay for BDCP to the extent it makes their water supplies more reliable. BDCP's benefits to endangered species protection and recovery, on the other hand, are public benefits, and the costs associated with those activities should be borne by the federal and state governments.</p>	
1723	1	The DEIS/DEIR and Draft Plan fail to meet minimum legal standards under the Natural Community Conservation Planning Act (NCCPA), Endangered Species Act (ESA), CEQA, NEPA,	Please note that Alternative 4A, also known as California WaterFix, has been developed in response to public and agency input and is the new CEQA Preferred Alternative. Alternative 4A is also the NEPA Preferred

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		<p>and related environmental laws.</p> <p>The Draft Plan and supporting analyses do not meet the stated intent to (1) minimize and mitigate for the effects of the activities proposed in this Plan, (2) provide for the conservation of covered species, or (3) meet the standards of the Delta Reform Act of 2009. Draft Plan at 1-1 to 1-2. Nor do the Draft Plan and DEIS/DEIR use the best available scientific data or otherwise comply with the minimum legal standards of several state and federal laws that it is required to meet, including CEQA and NEPA. The Draft Plan and DEIS/DEIR must be substantially revised and recirculated to meet these minimum requirements.</p>	<p>Alternative, a designation that was not attached to any of the alternatives presented in the 2013 Public Draft BDCP Draft EIR/EIS. Alternative 4 (BDCP) remains a potentially viable alternative and was carried forward in the RDEIR/SDEIS because it represents the original habitat conservation plan/natural community conservation plan (HCP/NCCP) alternative approach, and because it provides an important reference point from which the Alternative 4A, 2D, and 5A descriptions and analyses were developed. If the Lead Agencies ultimately choose the alternative implementation strategy and select an alternative presented in the RDEIR/SDEIS after completing the CEQA and NEPA processes, elements of the conservation plan contained in the alternatives in the 2013 BDCP Draft EIR/EIS may be utilized by other programs for implementation of the long term conservation efforts.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p> <p>Please see Master Response 4 for additional detail on the BDCP and the alternatives involving an HCP component.</p> <p>The commenter provides its opinion on the quality of the EIR/EIS but no specific comments are made on the content.</p>
1723	2	<p>The Draft Plan violates the Natural Community Conservation Planning Act.</p> <p>As the Natural Resources Defense Council, Defenders of Wildlife, and The Bay Institute explained in a letter to Department of Fish and Wildlife Director Bonham on July 10, 2013 (and incorporated here by reference), the Natural Community Conservation Planning Act ("NCCPA") provides the foundational elements for a successful BDCP. As Director Bonham explained in an op-ed, the NCCPA (Cal. Fish & Game Code [Section] 2800 et seq.) is a "cutting edge" law that sets a high bar for species protection, and that requires the BDCP to "provid[e] for the conservation and management of . . . 57 species." Charlton H. Bonham, Op-Ed., Plan could help fisheries, water supply, S.F. Chron., June 6, 2013. Unfortunately, the Draft Plan does not meet this laudable standard.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>DWR's fundamental purpose of the proposed project is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south of the Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations. The project would help to address the resilience and adaptability of the Delta to climate change through water delivery facilities combined with a range of operational flexibility. Please also see Master Response 3 regarding purpose and need.</p>
1723	3	<p>The Draft Plan fails to comply with the Natural Community Conservation Planning Act by: (1) failing to include conservation measures that are likely to be adequate to conserve covered species in the Plan Area; (2) failing to establish biological objectives that are consistent with the NCCPA standard [Footnote 2: See infra for the discussion of the adequacy of biological objections in sections III and IV of these comments.]; (3) providing regulatory assurances that are not "commensurate with long term conservation assurances," preclude effective adaptive management, and are otherwise inconsistent with the NCCPA [Footnote 3: See infra for the discussion of regulatory assurances in section I(C) of these comments.]; and, (4) failing to ensure adequate funding needed to implement the Draft Plan.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding NCCP requirements.</p>

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1723	4	<p>The Draft Plan fails to provide measures necessary to achieve conservation (recovery) in the Plan Area, as required by the NCCPA.</p> <p>To comply with the NCCPA, a Natural Community Conservation Plan must provide for measures necessary to recover covered species within the Plan Area. This is evident from the definition of "Natural Community Conservation Plan" in the statute, which requires that a plan "shall identify and provide for those measures necessary to conserve and manage natural biological diversity within the plan area while allowing compatible and appropriate economic development, growth, and other human uses." Cal. Fish & Game Code [Section] 2805(h). The NCCPA defines the terms "conserve," "conserving," and "conservation" as "the use of, methods and procedures within the plan area that are necessary to bring any covered species to the point at which the measures provided pursuant to [the California Endangered Species Act ("CESA")] are not necessary, and for covered species that are not listed pursuant to [CESA], to maintain or enhance the condition of a species so that listing pursuant to [CESA] will not become necessary." Id. At [Section] 2805(d) (emphasis added).[Footnote 4: In addition to the arguments raised in our 2013 letter, this conclusion regarding the recovery standard is further supported by the text and legislative history of the 2009 Delta Reform Act. First, provisions of the Delta Reform Act require BDCP to include "operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions." Cal. Water Code [Section] 85320(b)(2)(A) (emphasis added). Second, the November 4, 2009 Assembly Floor analysis of the Delta Reform Act 2009, which states that with respect to the NCCPA standard, "While some agencies have asserted that BDCP would be an NCCP, the December 2006 planning agreement specifically provided that the signatories were not committed to achieving the higher ecosystem recovery standard for an NCCP. This bill sets the higher NCCP standard ("the gold standard") as the threshold for state funding of the public benefits of BDCP activities, while relying on existing law." Nov. 4, 2009 Assembly Floor Analysis of SB 1 X7 (Simitian and Steinberg), available online at: http://leginfo.ca.gov/pub/09-10/bill/sen/sb_0001-0050/sbx7_1_cfa_20091104_035148_as_m_floor.html (emphasis added).] Thus, for species listed as endangered or threatened under the CESA, an NCCP must, within the Plan Area, identify and provide for those measures necessary to recover the species to the point where it is no longer considered endangered or threatened and no longer needs to be on the endangered species list. For unlisted species, the Draft Plan must provide measures, within the Plan Area, that keep the species from declining to the point at which it would need to be listed under CESA.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 31 regarding compliance with the Delta Reform Act.</p>
1723	5	<p>The Draft Plan fails to "provide for those measures necessary to conserve" listed species within the Plan Area. First, for a species that exists exclusively within the BDCP plan area, the BDCP must provide for all of the measures necessary for the species' recovery within the Plan Area. Such species include endangered delta smelt and longfin smelt. Merely contributing to these species' recovery is inadequate when the species occurs entirely within the Plan Area. This requirement is clear from several statutory provisions that require the Department to make specific findings regarding whether the Plan contains specific measures to "conserve" the covered species within the Plan Area. See Cal. Fish & Game Code [Section] 2805(h) (Plan "shall identify and provide for those measures necessary to conserve . . . within the plan area); id. at [Section] 2805(d) (defining conservation as recovery); id. at [Section] 2820(a)(4) (requiring Plan to contain "measures in the plan areas . . . as needed for the conservation of species"); id. at [Section] 2820(a)(6) (requiring plan to contain "specific conservation measures that meet the biological needs of covered species"); id. at [Section] 2835 (authorizing the Department to issue a take permit for a covered species if they find that the covered species' "conservation and management is</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Chapter 11 of this Final EIR/EIS.</p>

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		provided for in a [Plan]"). As discussed below, the Draft Plan fails to provide for those measures necessary to conserve delta smelt and longfin smelt, and instead predicts significant declines in the abundance of these species as a result of BDCP, CVP/SWP operations, and other cumulative impacts (including climate change) in the Plan Area.	
1723	6	The Draft Plan unlawfully limits the magnitude of the Plan's required contribution to a species' recovery by the extent of the Plan's impacts on that species. The NCCPA does not permit this artificially truncated contribution to recovery. Rather, the NCCPA takes a far more expansive view of Conservation Measures, which includes, but is not limited to, taking into account the impacts of covered activities on the covered species. See Fish and Game Code [Section] 2820(a)(6) ("The plan contains specific Conservation Measures that meet the biological needs of covered species and are based on the best available information regarding the status of the species and the impacts of permitted activities on those species."). But the Draft Plan indicates that the BDCP will not provide for sufficient measures to achieve recovery in the Plan Area if a species is imperiled by non-Plan impacts. BDCP Draft at 3.A-19 (explaining that BDCP did not strive to meet species' recovery plan goals, and noting that BDCP's goal-setting "process did not assume that BDCP would be solely responsible for recovery of [covered] species"). For species that exist solely in the Plan Area, this approach is not legally defensible because it ignores the NCCPA's focus on what is necessary to recover a species as opposed to simply addressing the impacts of covered activities. This approach also attempts to excuse the proponents from responsibility for multiple indirect effects of the Draft Plan. If plan developers ignore threats within a plan area that undermine the achievement of recovery of a covered species, the NCCPA's goal of delisting species would be impossible to achieve in most cases. The Draft Plan fails to require measures necessary for the conservation of covered species within the Plan Area, in part, because it fails to address impacts beyond those directly caused by the proposed permitted activities. That approach is unlawful.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.
1723	7	The manner in which the BDCP's proposed "contribution to recovery" standard is linked to species' geographic range is also inconsistent with the NCCPA. The Draft Plan limits the magnitude of the Plan's contribution to recovery for species with a range that extends beyond the BDCP's plan area. Draft Plan at 3.A-18 ("For species that have a substantial portion of their range outside the Plan Area, the BDCP's potential contribution to recovery is necessarily limited."); BDCP Planning Agreement at 8 (magnitude of contribution to recovery determined, in part, by "the scope of the BDCP Planning Area in relation to the geographic range of the Covered Species."). While it is clear that the NCCPA does not intend for a plan's conservation measures to occur in a species' range outside of the Plan Area, [Footnote 5: It is important to note that other legal requirements apply to the draft BDCP's impact on species outside of the Plan Area. For example, CVP/SWP operations proposed under the Draft Plan will have a significant impact on the operation of upstream reservoirs of the CVP and SWP. Those reservoir operations, in turn, may have a significant and adverse impact on the survival and recovery and listed fisheries below the reservoirs, including salmonids. Those impacts must be addressed, avoided and mitigated under a myriad of requirements, including Section 7 of the Endangered Species Act, CEQA, NEPA, the Central Valley Project Improvement Act, and other state and federal laws.] The Conservation Measures within the Plan Area must be adequate to support recovery within that area. The Draft Plan fails to meet this requirement.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The proposed project (Alternative 4A) and other action alternatives would not change operational criteria for the SWP and CVP reservoirs in the Sacramento Valley. See Chapter 5, Water Supply, of this Final EIR/EIS, for more information on changes in SWP and CVP reservoir storage. Please see Master Response 25 regarding upstream reservoirs.
1723	8	The latter flaw is especially relevant to covered salmonids, which spend a portion of their life-cycle within the Plan Area and a portion in other areas. There are a variety of	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.

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		<p>approaches possible when developing a conservation plan for salmonids:</p> <p>(1) Providing for measures within the Plan Area sufficient to recover the population;</p> <p>(2) Providing for all of the measures within the Plan Area necessary for and consistent with a recovery plan or strategy that encompasses the entirety of the species or range;</p> <p>(3) Providing for measures within the Plan Area that contribute to the recovery of population that spends part of its life cycle within the Plan Area in a manner proportional to the portion of the population's life cycle that is spent within the Plan Area.</p> <p>Of these approaches, only the second application of the NCCPA's conservation standard is legally defensible. The first approach, which requires the Plan to provide for all of the measures necessary for the recovery of any covered species that enters the Plan Area, is unrealistic. If animals are subject to take outside of the Plan Area, there may be little that plan participants could agree to do within the Plan Area to recover the species. In contrast, the third option is inadequate to meet the statutory standard because the amount of time spent in a geographic area is not reflective of the importance of the area. To the extent the Draft Plan limits its contribution to recovery so that the contribution is proportional to the time an anadromous fish spends in the Plan Area versus outside of the Plan Area, or to the size of the Plan Area compared to the other areas the fish spends its life, the BDCP is adopting the third standard, which fails because it is insufficiently protective.</p>	<p>Regarding the proposed project (4A) impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p>
1723	9	<p>As we discuss below, the proposed upstream operations of the CVP and SWP, which are integrally linked to and driven in large part by proposed operations in the Plan Area under the Draft Plan, in combination with climate change, are likely to result in potential extirpation and extinction of several salmon runs. See, e.g., National Marine Fisheries Service 2013, NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document, 4/4/13 ("NMFS 2013 Progress Assessment") at 12-13. This outcome is the opposite of the NCCPA's goal of recovery, and appears likely to result in a jeopardy opinion under Section 7 of the Endangered Species Act. Ultimately, the operations and CVP and SWP must adapt to climate change, not only for ecosystem protection, but also to manage water supply. The water projects cannot take the approach that there is no duty to adjust operations to account for climate change. It is difficult to imagine how the agencies could even consider approving a conservation plan under either the NCCPA or the ESA that predicts the likely extinction of several listed salmon runs.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>USFWS and NMFS have authority under the federal Endangered Species Act to determine whether the proposed project meets the regulatory standard of ESA Section 7, and CDFW, has authority to determine if the proposed project meets the regulatory standards of CESA. USFWS and/or NMFS will complete a biological opinion and CDFW will complete a 2081(b), setting forth an opinion detailing how the agency action affects the species or its critical habitat. See Master Response 29 regarding the project's compliance with the Endangered Species Act.</p> <p>Please also see response to comment 1723-7 regarding reservoir operations and Master Response 19 regarding climate change.</p>
1723	10	<p>The Draft Plan fails to ensure adequate funding for implementation of the Plan, as required by the NCCPA.</p> <p>Like the federal ESA, the NCCPA requires that the plan "ensure" adequate funding. See Cal. Water Code [Sections] 2820(a)(10), (b)(8). The Draft Plan and associated documents fail to meet this requirement. See discussion infra regarding the similar standard to ensure funding under the ESA.</p> <p>In discussing the ESA and NCCPA standards, the Delta Stewardship Council, which has review authority over DFW's review of BDCP's compliance with the NCCPA, recently noted that,</p> <p>"Although there are no cases interpreting the 'ensured funding' requirement under the NCCPA, there are a number of federal cases, and one state case, interpreting the very similar 'ensured funding' requirements for issuance of incidental take permits under the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master response 5 regarding BDCP funding.</p>

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		<p>federal Endangered Species Act and the California Endangered Species Act. In general, these cases conclude that meeting this requirement cannot rely on speculative future actions by other parties, but requires the applicant's guarantee of adequate funds to carry out the plan."</p> <p>(Delta Stewardship Council, October 24, 2013 staff report, Agenda Item 9, page 2, available online at http://deltacouncil.ca.gov/sites/default/files/documents/files/Item_9_8.pdf.)</p> <p>The Draft Plan proposes to rely on speculative future funding actions, and fails to provide such guaranteed funding.</p>	
1723	11	<p>The Draft Plan violates the Endangered Species Act.</p> <p>The federal Endangered Species Act ("ESA," 16 U.S.C. [Section] 1531 et seq.) provides another foundational set of requirements on the adequacy of the Draft Plan, which is intended to act as a Habitat Conservation Plan ("HCP") under Section 10 of the ESA. As described in the Draft Plan, the BDCP must satisfy at least the following criteria to qualify as an HCP:</p> <ul style="list-style-type: none"> - The applicant will ensure that adequate funding for the Plan will be provided; - The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of any taking that is incidental to an otherwise lawful activity; - The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. <p>(Draft Plan at 1-8; 16 U.S.C. [Section] 1539(a)(2)(B).)</p> <p>As we discuss below, the Draft Plan and accompanying documents fail to meet these requirements. Equally important, as we discuss extensively in Sections III and IV of these comments, the Draft Plan fails to use the best available science as required by the ESA. See 16 U.S.C. [Section] 1536(a)(2). In addition, as we discuss in Section I© of these comments, the Draft Plan and Draft Implementation Agreement propose to provide regulatory assurances that violate the requirements of the ESA, including the 5 Point Policy.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP's compliance with the Endangered Species Act.</p> <p>The Lead Agencies used the best available science throughout the effects analysis. The use of specific scientific data and findings was often vetted with fisheries managers to ensure it was the best available. A variety of data were obtained for the proposed project process: quantitative data from peer-reviewed published literature on topics specific to the Plan Area; peer-reviewed published literature outside the Plan Area but on topics relevant to the proposed project; unpublished quantitative data from within the Plan Area and from outside of the Plan Area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available.</p>
1723	12	<p>The Draft Plan and Draft IA fail to ensure adequate funding for Plan Implementation.</p> <p>As currently drafted, the Draft Plan and draft Implementation Agreement fail to comply with the funding provisions of the NCCPA and ESA. The Endangered Species Act is clear that the plan must "ensure" funding over the lifetime of the permit. 16 USC [Section] 1539(a)(2)(B)(iii); HCP Handbook at 3-33 to 3-34; National Wildlife Federation v. Babbitt, 128 F.Supp.2d 1274, 1294-95 (E.D. Cal., 2000); Southwest Center for Biological Diversity v. Bartel, 470 F.Supp.2d 1118, 1155 (S.D. Cal., 2006). Of particular note, the HCP Handbook is explicit that a HCP cannot rely on unappropriated federal funding to "ensure" funding of the plan in light of the "Anti-Deficiency Act and the availability of appropriated funds." HCP Handbook at 3-33 to 3-34. In addition, a HCP must provide "remedies for failure to meet funding obligations by signatory measures." National Wildlife Federation, 128 F.Supp.2d at 1294-95. And it is black letter law that a HCP "cannot rely on speculative future actions of others" for funding, and that the HCP effectively must be backed by a guarantee by the applicant to ensure funding for all plan elements. Bartel, 470 F.Supp.2d at 1155. The Bartel case is directly on point regarding the possibility of relying on funding from a future bond</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the California Natural Community Conservation Planning Act (NCCPA), and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project.</p>

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		<p>requiring voter approval, and in that case the Court noted that "the uncertainty of these ideas is readily apparent," that such funding is speculative in light of future voter approval requirements, and that relying on future bonds does not meet the requirement to ensure funding of an HCP under the ESA. Id. The HCP Handbook also emphasizes that,</p> <p>"Whatever the proposed funding mechanism is, failure to demonstrate the requisite level of funding prior to permit approval or to meet funding obligations after the permit is issued are grounds for denying a permit application or revoking or suspending an existing permit, respectively."</p> <p>(HCP Handbook at 3-35 (emphasis in original).)</p> <p>In contrast to these requirements, Chapter 8 of the Draft Plan explicitly states that it does not provide a financing plan and instead only provides estimates of potential funding sources:</p> <p>"It is important to note that this chapter is not a financing plan for the state or federal water contractors or any other party. Separate financing plans, funding agreements, legislative authority, and other documents will be needed to enable the use of certain funding sources. This chapter provides an overview of potential funding sources to support the implementation of the BDCP as well as the level of past financial support at the state and federal level for similar Delta activities."</p> <p>(Draft Plan at 8-64.)</p> <p>Despite this language, Chapter 8 also claims that these "potential funding sources" demonstrate that "adequate funding to implement BDCP has been assured." Draft Plan at 8-120. This conclusion is unlawful and unsupported by the text of Chapter 8.</p>	
1723	13	<p>The text of Chapter 8 assumes that funding from future water bonds would be used for BDCP. See Draft Plan at 8-64 to 8-65, 8-84 to 8-85. Although it is true that one or more future water bonds could fund BDCP, it is unlawful to assume that future water bonds provide assured funding for BDCP. Bartel, 470 F.Supp.2d at 1155.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP funding.</p>
1723	14	<p>The text of Chapter 8 assumes that billions of dollars in future federal funding could be dedicated to BDCP. See Draft Plan at 8-99 to 8-118. However, none of these federal funding sources are dedicated to BDCP, and all are subject to future appropriations by Congress. As such, these funds cannot be relied upon to ensure funding for BDCP. HCP Handbook at 3-33 to 3-34.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP funding.</p>
1723	15	<p>Chapter 8 fails to provide adequate remedies to ensure funding if there is a shortfall of initial funding sources for plan implementation. The only remedy identified in the document appears to be reduction in habitat restoration or other conservation measures required under the Draft Plan. Draft Plan at 8-122. This is unlawful; as the court concluded in <i>National Wildlife Federation v. Babbitt</i>,</p> <p>"It is not clear that a funding mechanism that is not backed by the applicant's guarantee could ever satisfy the requirement of [Section] 1539(a)(2)(B)(iii) that the applicant "ensure" funding for the Plan. Assuming, however, that a cost shifting mechanism "ensures" funding within the meaning of [Section] 1539(a)(2)(B)(iii), in these circumstances, where the adequacy of funding depends on whether third parties decide to participate in the Plan, the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP funding.</p>

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		<p>statute requires the applicant's guarantee...</p> <p>"In the face of the City's refusal to "ensure" funding, the Secretary's (B)(iii) finding with respect to the City's ITP is either at odds with the evidence in the record or is based on the City's untenable reading of the statute. In either case, while the Service's (B)(iii) finding is not arbitrary with respect to the Plan as a whole, it is arbitrary and capricious with respect to the City's Permit."</p> <p>(128 F.Supp.2d at 1294-95.)</p> <p>That court specifically rejected the argument that permit revocation was an adequate remedy to ensure funding. Id. The same is true here; BDCP must have some financial backstop or guarantee to ensure that the plan is fully implemented.</p>	
1723	16	<p>The draft Implementation Agreement ("Draft IA") includes unlawful statements and conclusions regarding the assurance of funding under the Draft Plan. See Draft IA at 11, 16, 45-48. For instance, the Draft IA states that, "The Parties acknowledge that such assurances do not require that all necessary funds be secured at the time of permit issuance, but rather establish that such funding is reasonably certain to occur during the course of Plan implementation." Draft IA at 45. This is wholly inconsistent with the requirement to "ensure" funding for the plan. See Bartell, 470 F.Supp.2d at 1155; Babbitt, 128 F.Supp.2d at 1294-95. In addition, the document states that, "Furthermore, as described in Chapter 8 of the Plan, the State and federal governments have committed to provide additional funding to implement the plan." Draft IA at 45. This is contradicted both by the text of Chapter 8 of the Draft Plan, which disclaims any firm commitment of funding by state or federal sources, and by the text on page 46. See Draft IA at 46 ("While the United States has been engaged in the development of this draft Agreement, there is no federal position as of this time regarding potential funding obligations of the United States.").</p> <p>We note that the Draft Plan improperly proposes that the public pay for restoration of the Yolo Bypass (CM2), despite the fact that restoration of the Yolo Bypass is required under existing permits as a mitigation measure. See Draft Plan at 8-74 (excluding CM2 from list of measures for which the contractors will pay any portion of costs). It is unclear how the allocation of costs was made in Chapter 8 between the public (state and federal taxpayers) and USBR/DWR (and their ratepayers), but in light of the fact that the draft plan fails to achieve the standards of the NCCPA, the conclusion that these measures are in excess of mitigation requirements of the project proponents and should be borne by the public appears unsupported.</p>	<p>Please see response to comment 1723-12 regarding the BDCP (Alternative 4) no longer being the preferred alternative and the Draft Implementation Agreement. See Master Response 5 regarding BDCP funding.</p>
1723	17	<p>The Draft Plan fails to minimize and mitigate takings to the maximum extent practicable.</p> <p>The ESA requires that an HCP minimize the take of covered species to the "maximum extent practicable" (16 U.S.C. Section 1539(a)(2)(B)(ii)). State law provides even more protection to species listed under the California Endangered Species Act (CESA). Under CESA, the take must be "minimized and fully mitigated," and under both CESA and the Natural Community Conservation Planning Act (NCCPA), the measures required to minimize take must be roughly proportional to the amount of take (California Fish and Game Code Sections 2081(b)(2) and 2820(b)(3)(b), (b)(9); 14 Cal. Code Regs. Section 783.4). There is no question that the CVP and SWP are significant sources of harm (which is encompassed within the definition of take) and mortality for most of the fish species covered by the Draft Plan [(see, e.g., NRDC v. Kempthorne, 506 F.Supp.2d 322 (E.D. Cal., 2007)]. Project-related take occurs not just through entrainment and salvage at export pumps, but throughout the integrated</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Proposed Project has been developed with the goals of minimizing and avoiding incidental take of listed species to the maximum extent practicable. Chapter 11, Fish and Aquatic Resources, and Chapter 12, Terrestrial Biological Resources, EIR/EIS, describe effects of the Proposed Project on fish and wildlife species in the Plan Area. Section 7 requires that federal agencies, in consultation with the federal fish and wildlife agencies, ensure that their actions are not likely to jeopardize the continued existence of species or result in modification or destruction of critical habitat. The proposed project is not legally required to provide for mitigation for existing SWP and CVP operations under CEQA, NEPA, CESA or ESA. The Regulatory Setting section in Chapter 11 and 12 of the EIR/EIS discusses the existing Biological Opinions that set terms and conditions for the operations of the SWP and CVP. The Executive Summary of the 2013 Draft EIR/EIS provides a description of how the existing Biological Opinions were treated with regard to the baseline</p>

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		<p>operation of the projects as a whole, including, for example, by failing to provide adequate cold-water habitat for fish below terminus dams, failing to provide sufficient attraction flows to prevent straying into dead-end sloughs and channels, and by creating channel blockages or altering flows in a manner that increases covered species' exposure to predation, invasive species, and toxics (see, e.g., San Luis & Delta-Mendota Water Authority v. Jewell, 747 F.3d 581, 627 (9th Cir. 2014) -- "CVP/SWP operations 'have ... played an indirect role in the delta smelt's decline by creating an altered environment in the Delta that has fostered the establishment of nonindigenous species and exacerbates these and other stressors that are adversely impacting Delta smelt."); id. At 628-29 -- discussing Projects' indirect effects on limiting food supply) id. At 629-30 -- discussing Projects' role in exacerbating water pollution); id. At 630-34 -- noting Projects' role in promoting the exposure of native species to harmful predators and the expansion of exotic species in the Delta). The extent of take associated with these activities is directly related to project operations, including those proposed as part of the Draft Plan.</p>	<p>assumptions used to assess the significance of impacts of the alternatives in relation to the baselines assumed under CEQA and NEPA.</p> <p>The Environmental Setting/Affected Environment section of Chapters 11 and 12 sufficiently discloses the existing facilities and their direct and indirect effects on aquatic and terrestrial species that the commenter describes.</p>
1723	18	<p>The Draft Plan fails to minimize and mitigate takings anticipated under the Plan to the maximum extent practicable, as required by the ESA. First, the Plan fails to minimize and mitigate takings associated with the Draft Plan's proposed operations that occur upstream of the Delta, instead claiming that the Projects do not have to modify their upstream operations to adjust to projected temperature increases because the Projects do not control water temperatures. This is incorrect. Those foreseeable effects must be addressed and minimized and mitigated. Second, where the Plan proposes mitigation, it is so uncertain as to be unreliable, and fails to meet the requirements of the ESA.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Proposed Project has been developed with the goals of minimizing and avoiding incidental take of listed species to the maximum extent practicable. Chapter 11, Fish and Aquatic Resources, and Chapter 12, Terrestrial Biological Resources, EIR/EIS, describe effects of the Proposed Project on fish and wildlife species in the Plan Area. Section 7 requires that federal agencies, in consultation with the federal fish and wildlife agencies, ensure that their actions are not likely to jeopardize the continued existence of species or result in modification or destruction of critical habitat.</p> <p>The CALSIM II modeling performed for conveyance facility operations takes into account projected future demand for water supply in areas upstream of the Delta (as part of the future No Action baseline) prior to calculating Proposed Project diversion estimates to ensure that no area-of-origin protections or upstream water rights are affected by project conveyance facilities. Please see Appendix 5A of the FEIR/FEIS for additional modeling details.</p> <p>The EIR/EIS evaluates all of the potential direct, indirect and cumulative impacts of the alternatives regardless of where they occur. See Master Response 25 for information regarding upstream reservoir operations. Chapter 11 of the EIR/EIS provides the analysis of the potential effects of temperature changes on fish species.</p> <p>Master Response 22 provides additional information regarding mitigation, environmental commitments, avoidance and minimization measures and Alternative-specific environmental commitments.</p>
1723	19	<p>The Draft Plan anticipates that the populations of several covered species -- particularly, salmon, sturgeon, and steelhead stocks -- will decline over the life of the Draft Plan, potentially to the point of extirpation, because of proposed operations and water temperatures below Project-operated dams will be too warm to sustain spawning and rearing. These adverse effects have been confirmed in numerous independent reviews. See, e.g., National Marine Fisheries Service 4/4/13 comments at 1.17 ("the cumulative effects of the project when combined with effects of climate change and other baseline conditions is showing the potential extirpation of mainstem Sacramento River populations of winter-run and spring-run chinook salmon over the term of the permit"); id. at 2.8 ("Keswick release strategies between the ESO (evaluated starting operations) and EBC (existing biological conditions) will result in increased egg mortality upstream. Lower flows in key summer and fall months increase egg mortality for winter-run and spring-run Chinook salmon and</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 of the EIR/EIS addresses the effects of operations on fish. Please see Master Response 25 regarding upstream reservoir effects and Master Response 28 regarding operational criteria.</p>

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		<p>potentially other runs. SacEFT habitat results show significant impacts on spawning and rearing habitat for winter-run that are above and beyond effects of climate change.... The analysis shows that ESO criteria could result in riskier operations relating to stranding risk for juveniles (over two times more low risk years under EBC."); id. at 2.9 ("While the high spring-time Feather River flows modeled in HOS could attract sturgeon into the Feather River from the Sacramento River, summertime releases are decreased compared to EBC2 to provide for end-of-September storage requirements. The decreased summertime river flows increase water temperatures in the high-flow channel; the resulting temperatures reported in the effects analysis would be lethal to sturgeon eggs and embryos.") The Plan declines to mitigate for this take, even though the Projects could be re-operated to improve the extent and duration of cold-water habitat for these species. But the Draft Plan declines to address this take or propose measures to mitigate it, claiming that the increasing water temperature is not an effect of the Plan, but primarily a result of externally induced climate change. That is incorrect; operations of these dams and reservoirs strongly affect downstream water temperatures and are driven by water delivery demands, including operations in the Delta.</p>	
1723	20	<p>The Projects have the ability to expand the cold-water pools in Project-controlled reservoirs; adjust reservoir releases to match the temperature and timing needs of cold-water species; construct, repair or maintain lower outlets to better access cold water behind dams (particularly relevant to Oroville Dam); and install other measures such as temperature control curtains to control downstream temperatures to protect cold water habitat in response to these changes. See, e.g., DWR, "Reconnaissance Study of Potential Future Facilities Modifications," Oroville Facilities Settlement Agreement Implementation FERC Project No. 2100 (Dec. 2006) (acknowledging improved ability to meet cold-water species temperature requirements with improvements to the Oroville Dam River Valve) (incorporated herein by reference). Moreover, the Projects have the obligation to do so -- there is nothing in the law that excuses the agencies from their obligations to avoid jeopardy and to protect and restore salmon and other cold-water fish simply because external factors contributed to the problem, particularly in a plan that purports to conserve and recover covered species.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 25 regarding upstream reservoirs.</p>
1723	21	<p>The Draft Plan essentially ducks the problem by attempting to claim the Projects are powerless to mitigate for increasing water temperatures. That is simply false. "Normally, an agency rule would be arbitrary and capricious if the agency has ... entirely failed to consider an important aspect of the problem." Motor Vehicle Manufs. Ass'n v. State Farm Automobile Ins. Co., 463 U.S. 29, 43 (1983). Here, the Draft Plan fails to consider the many feasible ways in which it could mitigate for the increased upstream take resulting from proposed Project operations in light of increasing water temperatures. As stated in the Service's HCP Handbook:</p> <p>"[P]articularly where adequacy of mitigation is a close call, the record must contain some basis to conclude that the proposed program is the maximum that can be reasonably required by that applicant. This may require weighing the benefits and costs of implementing additional mitigation, the amount of mitigation provided by other applicants in similar situations, and the abilities of that particular applicant."</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 25 regarding upstream reservoir effects.</p>
1723	22	<p>The Draft Plan's approach violates the requirement that proponents must address the impacts of the whole of the action in analyzing impacts and associated mitigation. See, e.g., Connor v. Burford, 848 F.2d 1441, 1457-58 (9th Cir.1988). [Footnote 6.] As explained by the Ninth Circuit in Southwest Ctr. for Biological Diversity v. Bartel:</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 25 regarding upstream reservoirs and Master Responses 5 and 29 regarding the</p>

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		<p>The ESA "does not permit the incremental-step approach" of consultation because "Biological Opinions must be coextensive with the agency action." Conner, 848 F.2d at 1457-58; accord Center for Biological Diversity v. Rumsfeld, 198 F.Supp.2d 1139, 1155 (D.Ariz.2002); Greenpeace v. National Marine Fisheries Serv., 80 F.Supp.2d 1137, 1143-45 (W.D.Wash.2000). "[T]he ESA requires that all impacts of agency action -- both present and future effects on species -- be addressed in the consultation's jeopardy analysis." American Rivers v. United States ACOE, 271 F.Supp.2d 230, 255 (D.D.C.2003). This rule ensures that the ESA is enforced in an effective manner because "impermissible segmentation would allow agencies to engage in a series of limited consultations without ever undertaking a comprehensive assessment of the impacts of their overall activity on protected species." Id. (emphasis added).</p> <p>The lesson of Conner applies to this case because the ESA's policy of "institutionalized caution," Tennessee Valley, 437 U.S. at 194, 98 S.Ct. 2279, "can only be exercised if the agency takes a look at all the possible ramifications of the agency action." Conner, 848 F.2d at 1453 (quotation and citation omitted).</p> <p>[Footnote 6: It is no excuse to claim that Project operations upstream of the Delta are driven by considerations beyond those contemplated in the Draft Plan. Even if it were possible to segregate Project operations in this manner (which it is not), the Draft Plan must be accompanied by a system-wide ESA consultation to obtain necessary take permits. For example, the Draft Plan explains that it is intended "to support the issuance of a joint BiOp under Section 7 by USFWS and NMFS authorizing the incidental take associated with BDCP actions undertaken by Reclamation and CVP contractors within the Plan Area. That joint BiOp will also address the decision by USFWS and NMFS to issue Section 10 permits to the Authorized Entities." Draft Plan at 1-8. In addition, the coordinated operations of the CVP and SWP and its infrastructure (including any modifications proposed by BDCP) must undergo a section 7 consultation under the ESA. See 74 Fed. Reg. 7257, 7258 ("in a parallel yet separate process, Reclamation will be required to reinitiate Section 7 consultation on the long-term operation of the CVP, as coordinated with the SWP, to the extent that such coordinated operations may be modified to effectively be integrated with any operational or facility improvements that may occur from implementation of the BDCP."). That consultation must consider the coordinated operations of the projects as a whole, not merely any changes proposed by BDCP, and the consultation must consider all federal, state, private and other actions that may affect listed species, including nondiscretionary actions, to ensure that the proposed project will not cause jeopardy to the survival and recovery of the species or adversely modify its critical habitat. NWF v. NMFS, 524 F.3d 917, 928-931 (9th Cir. 2008).]</p>	<p>projects compliance with the Endangered Species Act.</p>
1723	23	<p>Though Fish and Wildlife Service chose not to evaluate the cumulative impact of the implementation of the Multi-Species Conservation Program and Subarea Plan on the vernal pool species, it fixed the ameliorative measures for the fifty-year life of the Incidental Take Permit to those contemplated in 1997. Ironically, this structure diminishes the value of one of the primary strengths of regional conservation planning -- enabling jurisdictions to plan and implement protections for an entire ecosystem. E.g., AR 6780-82, 23189-90, 28100-01, 39463. By the time FWS undertakes its incremental site-specific consultations it may have lost the opportunity to protect the vernal pool species from extinction. Conner, 848 F.2d at 1454-58 (requiring comprehensive information and review "to avoid piecemeal chipping away of habitat"). The flaw is fatal in the context of this case because all vernal pool habitat outside of the San Diego region has been destroyed. E.g., AR 26236 ("The loss of vernal pool habitat is nearly total in Los Angeles, Riverside, and Orange counties"); 63 Fed.Reg. at</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 of the EIR/EIS addresses the effects of operations on fish. Please see Master Response 25 regarding upstream reservoir effects and Master Response 28 regarding operational criteria.</p>

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		<p>54983-84; 58 Fed.Reg. at 41387 (otay mesa mint). The vernal pool species have narrow and strict habitat requirements. E.g., 58 Fed.Reg. at 41388 (Riverside fairy shrimp); 62 Fed.Reg. at 4929 (San Diego fairy shrimp). The remaining habitat is found within the area covered by the MSCP (and lands controlled by the military). Because the MSCP controls the fate of the remaining vernal pool habitat throughout all of its range, it is particularly important to comply with the purpose and spirit of the ESA to seek to prevent the extinction of these species.</p> <p>(470 F. Supp. 2d 1118, 1142-43 (S.D. Cal. 2006).)</p> <p>Here, the Draft Plan puts on blinders and pretends that Project operations proposed under the 50-year Plan have no effect on water temperatures or habitat or species viability below Project dams, when it undeniably does.</p>	
1723	24	<p>The fact that climate change is an exacerbating factor is not an excuse for the proponents to avoid grappling with this aspect of Project operations. As explained by California Department of Fish and Wildlife in the attached Memorandum dated October 15, 2009 insisting that Caltrans mitigate for impacts related to sea level rise and climate change:</p> <p>"Based upon ... climate change and SLR [sea level rise] data and the project's size, location, design life, and reasonable foreseeable adaptation strategy, there is a fair argument this project could have [significant] ...impacts on the Humboldt Bay ecosystem.</p> <p>...</p> <p>[T]he project's ... facilities should provide adequate channel or flow capacity based upon calculations using current SLR and climate change projections.</p> <p>...</p> <p>DFG recommends this project's Final EIR evaluate how this project will adapt to SLR. While adaption options are reasonably foreseeable, they need not be undertaken in the current project. However, given that potentially significant indirect environmental impacts from such adaptations are reasonably foreseeable, they should be evaluated during the current environmental review for this project."</p> <p>(Comments of California Department of Fish and Game to CA Dept. of Transp. re: Eureka-Arcata Corridor Improvement Project, Draft EIR/EIS SCH #200192035, October 15, 2009, at 8, 11-12.)</p> <p>The Draft Plan must be revised to evaluate impacts from reasonably foreseeable adaptation changes to Project operations and facilities during the life of the Project required to maintain adequate cold-water temperatures for species viability, address this critical aspect of the "whole of the action," and identify mitigation measures to minimize and avoid, where possible, associated take.</p>	<p>See response to comment 1723-23 regarding impacts to fish species.</p> <p>See Master Response 8 regarding how the Lead Agencies analyzed the project as a whole and Master Response 19 regarding climate change.</p>
1723	25	<p>Under the Endangered Species Act (ESA), mitigation measures must be "reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards." Ctr. for Biological Diversity v. Rumsfeld, 198 F.Supp.2d 1139, 1152 (D.Ariz.2002) (citing Sierra Club v. Marsh, 816 F.2d 1376 [9th Cir.1987]); see also NWF (National Wildlife Federation) v. NMFS</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 of the EIR/EIS addresses the effects of operations on fish. Please see Master Response 28 regarding operational criteria and Master Response 33 regarding adaptive management and monitoring.</p>

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		<p>(National Marine Fisheries Service), 481 F.3d 1224 at *12 & n. 16 ("Although the record does reflect a general desire to install structural improvements [to benefit fish] where feasible, it does not show a clear, definite commitment of resources for future improvements."). While adaptive management tied to clearly enforceable biological objectives and actions may fit within this paradigm, "overly flexible adaptive management may be incompatible with the requirements of the ESA." NRDC (National Resources Defense Council) v. Kempthorne, 506 F. Supp. 2d at 352. "[A]t a minimum, a mitigation strategy must have some form of measurable goals, action measures, and a certain implementation schedule; i.e., that mitigation measures must incorporate some definite and certain requirements that ensure needed mitigation measures will be implemented." Id. at 355 (citing Rumsfeld, 198 F.Supp.2d 1139 [D. Az. 2002]). Many of the Draft Plan's proposed conservation and mitigation measures fall into the latter category, requiring only process rather than a slate of specific, certain and feasible measures to protect species and their habitat.</p> <p>Several critical aspects of the Draft Plan are not reasonably certain to occur and cannot be relied on under the ESA. First, the flows required under the High Outflow Scenario are not likely to occur in a significant percentage of years because of arbitrary operational limitations. Second, modeled operations that are more protective than the operational rules are not reasonably likely to occur. Third, reliance on adaptive management generally and on the biological objectives specifically is not reasonably likely to occur, because: (a) the Draft Plan proposes that implementation of the conservation measures, not achievement of the biological objectives, is the measure of the plan; and, (b) the adaptive management structure, including the regulatory assurances, eliminate effective adaptive management that would require additional water. Fourth, the Draft Plan cannot lawfully rely on purchases of water to meet minimum instream flows, see, e.g., Draft Plan at 3.4-356, but must ensure that in the absence of adequate funding or lack of available water transfers the minimum flows will be implemented. [Footnote 7: Although the Draft Plan briefly mentions this concept, it is not a covered activity under the Draft Plan, the effects of such a program are not analyzed in the Draft Plan or the DEIS/DEIR, and there is no funding provided to implement such a program. Prior effects to acquire environmental flows, such as the Environmental Water Account (EWA), have been abject failures, and it is not clear how such a program would ensure that public funds were not being used to pay for private mitigation obligations (such as meeting minimum flow requirements), which would likely constitute an unlawful gift of public funds.]</p>	
1723	26	<p>The Draft Plan fails to demonstrate that taking will not appreciably reduce the likelihood of survival in the wild.</p> <p>The Project operations proposed by the Draft Plan will lead to increased take of covered species. The Draft Plan and DEIS/DEIR demonstrate that this increased take will appreciably reduce the likelihood of survival of listed species in the wild and in combination with other reasonably foreseeable factors, will jeopardize the continued existence and recovery of several listed species, anticipating the potential extirpation and substantial decline in abundance of longfin smelt and several stocks of salmon and steelhead. This result is prohibited under section 10 of the ESA, and prevents the Plan from satisfying the minimum requirements of an HCP or NCCPA.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The proposed project was developed to meet the rigorous standards of the federal and state Endangered Species Acts, as such it is intended to be environmentally beneficial, not detrimental. By establishing a point of water diversion in the north Delta and new operating criteria, the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility.</p> <p>The new alternative/proposed action is in the process of seeking ESA coverage through a Section 7 consultation with USFWS and NMFS. The project proponents are currently in the process of satisfying all regulatory requirements and seeking all necessary permits. For more information about the new preferred alternative, please see Chapter 11, Aquatic Resources, Section 11.4.1.2, Alternative 4A in the Final EIR/EIS.</p>
1723	27	<p>Proposed assurances are inconsistent with the best available scientific information and effective Adaptive Management.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p>

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		<p>The scope of regulatory assurances and how they impact effective adaptive management has been a key issue throughout the development of BDCP. In our 2008 scoping comments, we stated that,</p> <p>"As both the ESA and NCCPA recognize, adaptive management is a necessary element of an ecologically sustainable HCP/NCCP. Fish & Game Code [Section] 2820(a)(2), (8), (b)(5), (f)(1)(G); HCP Handbook at 3-24; see 50 C.F.R. [Section] 17.22(b)(2)(C), (b)(5).... The NCCPA requires that the level of assurances provided by a NCCP be "commensurate with long-term conservation assurances and associated implementation measures pursuant to the approved plan." Fish & Game Code [Section] 2820(f). A critical component in determining the level of assurances is "[t]he degree to which a thorough range of foreseeable circumstances are considered and provided for under the adaptive management program." Id. [Section] 2820(f)(1)(8); see also 50 C.F.R. [Sections] 17.22(b)(5), 222.307(g) (regulatory assurances with respect to changed and unforeseen circumstances under the ESA). In addition, we note that California law requires suspension or revocation of the NCCP if take of the species under the plan will jeopardize the continued existence of the species. See Fish & Game Code [Section] 2823. Thus all parties have an incentive in ensuring that the HCP/NCCP achieves its goals and avoids jeopardy to any listed species.... As such, the flexibility required for the BDCP to succeed precludes any inflexible guarantees or complete regulatory assurances regarding water supplies and exports.... Instead, the BDCP must retain sufficient flexibility to respond to changed conditions and continue to conserve and restore listed species and the health of the Delta ecosystem."</p> <p>(See Scoping comments at 4-5.)</p> <p>Unfortunately, the proposed assurances (including the provisions of "water supply neutral" adaptive management) eliminate the necessary flexibility for the Draft Plan to be likely to achieve the Plan's biological goals and objectives, are inconsistent with the NCCPA's statutory criteria for assurances, and fail to adequately address changed circumstances.</p>	<p>Chapter 11 of the EIR/EIS addresses the effects of operations on fish. Please see Master Response 28 regarding operational criteria and Master Response 33 regarding adaptive management and monitoring.</p>
1723	28	<p>The Draft Implementing Agreement makes clear that the BDCP biological objectives are not enforceable, and that implementation of the Conservation Measures -- not achievement of the biological objectives -- is the only obligation of the plan proponents and permittees:</p> <p>"Through the implementation of the Plan, including adjustments made through the adaptive management process, Permittees will satisfy their obligation to achieve the biological goals and objectives. Unless otherwise specified in the Plan or this Agreement, failure to achieve a biological goal(s) and/or objective(s) shall not be a basis for a determination by the Fish and Wildlife Agencies of non-compliance with the Plan or for suspension or revocation of the Permits, provided the Permittees are properly implementing BDCP and are in compliance with this Agreement and the terms and conditions of the Permit."</p> <p>(Draft IA at 24 (Section 10.1))</p> <p>The Draft IA also makes clear, consistent with language in the Draft Plan, that adaptive management must be 'water supply neutral,' stating that, "The Parties agree that any potential adaptive management change to the Conservation Measures, either individually or cumulatively, shall not require the commitment of resources, including land, water or money, in excess of those specifically provided for under these strategies, including the Supplemental Adaptive Management Fund, or alter the financial commitments of Plan Participants, as set out in Chapter 8." Draft IA at 36; see Draft Plan at 3.4-354 to -357.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the California Natural Community Conservation Planning Act (NCCPA), and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project.</p> <p>Please note that the new proposed project (Alternative 4A) no longer includes an HCP/NCCP and would achieve incidental take approval through the ESA Section 7 and CESA 2081(b) permitting processes. Nevertheless, Alternative 4A does include a Collaborative Science and Adaptive Management Program to address the uncertainty surrounding operations and to evaluate the effectiveness of various mitigation measure/ environmental commitments. Please see Master Response 33 for more information regarding</p>

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			adaptive management and monitoring.
1723	29	Contrary to statements in the Draft Implementing Agreement, the Draft Plan fails to demonstrate that it is likely to achieve many of the biological objectives, many of the objectives are not consistent with the requirements of the NCCPA, ESA, and other laws, and the Draft Plan is unlikely to achieve many of these critical biological objectives. The Draft IA asserts that, "The Conservation Measures are expected to be sufficient to achieve the biological goals and objectives of the Plan during the 50-year timeframe for Plan implementation." Draft IA at 24 (section 10.2). This statement is not supported by the Draft Plan or the independent scientific and agency reviews.	Please see response to comment 1723-28 regarding the Draft Implementing Agreement.
1723	30	Although the Draft Plan and DEIS/DEIR fail to analyze consistency with most of the biological objectives, the best available scientific evidence shows that the Draft Plan is unlikely to achieve the Plan's biological objectives and that the objectives are not legally adequate.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The commenter states an opinion on the BDCP and EIR/EIS. No specific comment is made on the content of the EIR/EIS.
1723	31	Salmon survival objective: The Draft Plan is likely to reduce survival of salmon migrating through the Delta and there is no scientific evidence that the survival objectives are likely to be achieved. National Marine Fisheries Service has admitted that, "A rough examination of this issue in the current draft indicates that it may be difficult to meet the through-delta survival objectives for salmonids under the proposed operational criteria." NMFS 2013 Progress Assessment at 22. The salmon survival objectives also fail to meet the requirements of the NCCPA and other laws.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Chapter 11 of the EIR/EIS evaluates the project's effects on salmon. The DWR and BOR will be consulting with NMFS through Section 7 of the ESA. ESA Section 7 requires that federal agencies, in consultation with the federal fish and wildlife agencies, ensure that their actions are not likely to jeopardize the continued existence of species or result in modification or destruction of critical habitat.
1723	32	Delta smelt entrainment objective: The Draft Plan and DEIS/DEIR demonstrates that entrainment under the Draft Plan is likely to exceed this objective, and the objective is not consistent with the existing incidental take statement required under the ESA.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Chapter 11 of the EIR/EIS addresses entrainment of delta smelt. Implementing the conveyance facilities would help resolve many of the concerns with the current south Delta conveyance system, and would help reduce threats to endangered and threatened species in the Delta, including entrainment south Delta export facilities. For instance, implementing a dual conveyance system would align water operations, and their location, to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with State-of-the-art fish screens, thus reducing reliance on south Delta exports during times of the year when listed aquatic species are present and most vulnerable. For more information on mitigation measures to minimize contraction and operational-related impacts to fish species, including Delta and longfin smelt, please see Chapter 11, EIR/EIS and Master Response 17 regarding impacts to smelts.
1723	33	Longfin Smelt abundance and productivity objectives: The Draft Plan and DEIS/DEIR demonstrate that longfin smelt abundance is predicted to significantly decline under the Draft Plan, that the objectives are not likely to be achieved, and that the objectives are not consistent with ESA and NCCPA requirements.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding declines in longfin smelt under the Draft Plan, it is correct that, based only on X2-relative abundance relationships, there are various alternatives with lower estimated abundance than the CEQA or NEPA baselines. As shown in Chapter 5 of the public draft BDCP (p. 5.5.2-12), the proposed BDCP HOS was estimated to give greater relative abundance than existing biological conditions in the late long term. As discussed in Section 5.5.2.1.1 of the BDCP public draft, the uncertainty regarding the necessary spring Delta outflow, together with other conservation measures, to provide conservation and management of longfin smelt would be addressed with the spring outflow decision-tree process. Please also see Master Response 44 related to the Decision Tree process and Master Response 17 regarding impacts to smelts and attainment of the NCCPA standard.

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1723	34	Upstream water temperature objectives: the Draft Plan and DEIS/DEIR demonstrate that operations will not be consistent with this objective, nor will operations comply with existing temperature requirements under the ESA. Modeling in the DEIS/DEIR and Draft Plan indicate that abundance of numerous salmon and steelhead runs will decline, and several may go extinct.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As shown in Appendix 11D, Sacramento River Water Quality Model and Reclamation Temperature Model Results Utilized in the Fish Analysis, in the FEIR/EIS, there are periods of time under the action alternatives when water temperatures in the Sacramento, Feather, and American rivers would be greater than under the Existing Conditions. However, water temperatures in these streams would be similar or lower under the action alternatives than under the No Action Alternative. These comparisons indicate that difference between conditions under the alternatives and Existing Conditions are caused by climate change and sea level rise, and not implementation of the alternatives (which would have been shown in the comparison with the No Action Alternative).</p>
1723	35	<p>Numerous independent scientific reviews and agency reviews have identified failures to use the best available science in the Draft Plan, and they have emphasized the need for an effective adaptive management program in BDCP because of scientific uncertainty.</p> <p>However, providing assurances that restrict adaptive management to being "water supply neutral" is not consistent with the best available science regarding the effectiveness of the proposed Conservation Measures in achieving these biological objectives. [Footnote 8: In addition, the Draft IA and Draft Plan establish additional measures that reduce the effectiveness of adaptive management. For instance, the Draft IA appears to allow the Implementation Office to change Conservation Measures through adaptive management without the approval and concurrence of the fishery agencies, even if such measures reduce protections for covered fish and wildlife species. Draft IA at 32. The Draft IA also impedes adoption of adaptive management measures that affect water supply, id. At 35, and create procedural roadblocks to effective adaptive management through the dispute resolution process, id. At 36.] Such assurances make it substantially less likely that the Draft Plan will achieve the biological objectives, as they prevent BDCP from requiring measures to improve flow conditions and address some of the most important stressors on these populations.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive management. It is assumed the Collaborative Science and Adaptive Management Program (AMMP) developed for Alternative 4A would not, by itself, create nor contribute to any new significant environmental effects; instead, the AMMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 4A.</p> <p>Collaborative science and adaptive management will support the proposed action by helping to address scientific uncertainty where it exists, and as it relates to the benefits and impacts of the construction and operations of the new water conveyance facility and existing CVP and SWP facilities.</p> <p>The collaborative science effort is expected to inform operational decisions within the ranges established by the biological opinion and 2081b permit for the proposed action. However, if new science suggests that operational changes may be appropriate that fall outside of the operational ranges evaluated in the biological opinion and authorized by the 2081b permit, the appropriate agencies will determine, within their respective authorities, whether those changes should be implemented. An analysis of the biological effects of any such changes will be conducted to determine if those effects fall within the range of effects analyzed and authorized under the biological opinion and 2081b permit. If NMFS, USFWS, or DFW determine that impacts to listed species are greater than those analyzed and authorized under the biological opinion and 2081b Bay Delta Conservation Plan/California WaterFix permit, consultation may need to be reinitiated and/or the permittees may need to seek a 2081b permit amendment. Likewise, if an analysis shows that impacts to water supply are greater than those analyzed in the EIR/EIS, it may be necessary to complete additional environmental review to comply with CEQA or NEPA.</p> <p>Please see Master Response 33 for more information regarding the adaptive management and monitoring program.</p>
1723	36	<p>The proposed assurances are not commensurate with conservation assurances as required by the NCCPA, and otherwise violate state law.</p> <p>Under the NCCPA, regulatory assurances are required to be "commensurate with long-term conservation assurances and associated implementation measures." Cal. Fish and Game Code [Section] 2820(f). The NCCPA requires the Department to consider certain criteria in determining the "level of assurances" to be provided, including: the level of knowledge of the status of species; the adequacy of the analysis of the impact of take on covered species; the use of the best available science and the reliability of mitigation strategies; the range of</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties</p>

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		<p>foreseeable circumstances provided for under the adaptive management program; and the duration of the plan. Id.</p> <p>Unfortunately, the assurances proposed in the Draft Plan and Draft IA are not commensurate with long-term conservation assurances, nor are they adequate in light of the existing scientific information regarding the likelihood that the proposed conservation measures will not achieve the biological objectives, the failure to use the best available science, the lack of meaningful adaptive management responses to changed circumstances, and the 50 year duration of the Draft Plan. For instance, there effectively are no "long-term conservation assurances," as the Draft Plan and Draft IA make clear that the biological objectives are not enforceable and that a failure to achieve these objectives will not result in additional restrictions on water supply, despite the available scientific evidence about the likelihood that proposed conservation measures will not achieve the Draft Plan's biological objectives. Similarly, numerous independent and agency scientific reviews have concluded that the Draft Plan and DEIS/DEIR fail to use the best available science, contrary to the requirements of section 2820(f). The available scientific information demonstrates that the Draft Plan is unlikely to achieve many of the biological objectives as currently designed, and that several salmon runs and other covered species may in fact go extinct during the duration of the Draft Plan. The extensive length of the draft permits (proposed for 50 years, with the possibility of extension) strongly indicates that assurances should be more limited. And as discussed below, the Draft Plan's provisions regarding foreseeable circumstances, particularly climate change, are significantly flawed and inconsistent with legal requirements. As a result, the proposed assurances are not consistent with the NCCPA.</p> <p>In addition, the proposed assurances, particularly to the extent that they prevent adaptive management and real time operations from achieving biological objectives, also violate the Delta Reform Act. See Water Code [Section] 85321 ("The BDCP shall include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations.").</p>	<p>required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the California Natural Community Conservation Planning Act (NCCPA), and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project.</p> <p>Please see Master Response 28 regarding operational criteria, Master Response 31 regarding compliance with the Delta Reform Act, and Master Response 33 regarding adaptive management and monitoring.</p>
1723	37	<p>The Draft Plan's provisions regarding changed circumstances, particularly foreseeable circumstances such as climate change, are unlawful.</p> <p>Both the NCCPA and ESA generally require the Draft Plan to address changed circumstances, including foreseeable circumstances. See Cal. Fish and Game Code [Sections] 2805(c), 2820(g); 50 C.F.R. [Sections] 17.22(b)(5), 222.307(g); HCP Handbook at 3-28. The Draft Plan identifies a number of clearly foreseeable circumstances, such as levee failures, climate change, drought,[Footnote 9: The Draft Plan states, however, that drought is only a foreseeable circumstance with respect to the terrestrial reserve system, and that "the expected effects of droughts on the aquatic natural communities are not considered a changed circumstance." Draft Plan at 6-37. This is inappropriate; the scope of a future drought could certainly exceed that modeled in the Draft Plan and in such circumstances, additional measures will be needed to protect fish and wildlife. If drought conditions truly are addressed in the Draft Plan and no additional measures will be required, then the Draft Plan must also prohibit any regulatory changes to respond to drought that weaken operational protections for fish and wildlife, such as Temporary Urgency Changes that reduce Delta outflow requirements under D-1641 or relaxation of ESA protections.] and nonnative species. Draft Plan at 6-32. However, the Draft Plan generally proposes no additional measures to address these foreseeable circumstances, and precludes any measures to adapt to these changed circumstances that would require additional</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Responses 19 and 31, respectively regarding climate change and compliance with the Delta Reform Ac.,</p>

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		<p>commitments of water or funding from the water contractors. See Draft Plan at 6-30.</p> <p>These proposed provisions are not compatible with the requirements of state and federal law, particularly regarding the effects of climate change. Climate change is a foreseeable circumstance, and is likely to result in substantial adverse effects on aquatic and terrestrial ecosystems and species in combination with CVP/SWP operations (including BDCP) absent additional changes beyond those proposed in BDCP, including reductions in Delta inflows and outflows, increased air and water temperatures.[Footnote 10: BDCP modeling projects little change in inflows on the Sacramento River, see Draft Plan at 5.A.2-101, increased Delta salinity, id. at 5.A.2-107, and increased extinction risks and reduced habitat for numerous covered species, id. at 5.A.2-101-107.] Yet the Draft Plan proposes that "no additional actions will be required to remediate climate change effects on covered species and natural communities in the reserve system." Draft Plan at 6-43. This is legally inadequate.</p>	
1723	38	<p>Despite acknowledging significant effects of climate change in the Draft Plan and DEIS/DEIR, the Draft Plan repeatedly disclaims any responsibility to address the adverse effects of climate change, repeatedly distinguishing adverse effects as the result of climate change (rather than the effect of the Draft Plan). See, e.g., Draft Plan at 5.5-3, 5.5-11, 5.3-20, 5.5.3-45 to -47. The Draft Plan and DEIS project substantial population declines, and possible extinction, as a result of BDCP and climate change. Yet the Draft Plan makes no provisions to mitigate the impacts of CVP/SWP operations in light of climate change, particularly in terms of upstream operations.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As the commenter points out the BDCP EIR/S and Draft Plan both highlight significant adverse impacts that are likely to occur throughout the Plan Area as a result of changes in climate. The Lead Agencies have included these impacts in order to more accurately describe expected future conditions in the Plan Area both with and without the project. CEQA and NEPA require that Lead Agencies analyze, describe, and mitigate for impacts resulting from the project. Neither CEQA nor NEPA require that Lead Agencies mitigate for the impacts of climate change that would occur with or without the project.</p> <p>Further, no individual project could be expected to mitigate for or provide adaptation to all of the diverse impacts of climate change. The action alternatives however, do provide additional climate change adaptation and resiliency in the face of many climate change impacts as described in the FEIR/S Chapter 29.</p>
1723	39	<p>The Draft Plan must be revised to evaluate impacts from reasonably foreseeable adaptation changes to Project operations and facilities during the life of the Project required to maintain adequate cold-water temperatures for species viability, address this critical aspect of the "whole of the action," and identify mitigation measures to minimize and avoid, where possible, associated take.</p> <p>Federal agencies have previously concluded that "the range of adaptive responses available to address those changed circumstances is far too narrow and limiting." National Marine Fisheries Service 2013 Progress Assessment at 22; U.S. Fish and Wildlife Service 2013, USFW Staff BDCP Progress Assessment, April 3, 2013 ("USFWS 2013 Progress Assessment") at 29. We strongly concur. The Draft Plan must be revised to incorporate additional measures to address the impacts of CVP/SWP operations in light changed circumstances, particularly climate change, including operations upstream.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-39 regarding climate change.</p> <p>Please see Master Response 28 regarding operations and 25 regarding upstream reservoirs.</p>
1723	40	<p>The proposed assurances are inconsistent with the ESA, including the Services' Five Point Policy</p> <p>National Marine Fisheries Service and U.S. Fish and Wildlife Service adopted an addendum to the HCP Handbook in 2000, which is referred to as the Five Point Policy. See 65 Fed. Reg. 35242 (June 1, 2000). In 2010, the Federal agencies issued a white paper on application of the Five Point Policy to BDCP. It states in pertinent part that,</p> <p>"The BDCP is a complex, landscape scale, long-term HCP with a high degree of uncertainty as to how close the initial conservation measures will come to achieving the plan's biological</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties</p>

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		<p>goals and objectives. It falls into the category of plans that will be a mixture of the two strategies, with initial prescriptions associated with adaptive management, and specific biological outcomes defining the ultimate success of the plan. This type of plan will allow management flexibility so the permittee may institute actions necessary to achieve the plan's goals while providing boundaries for future expectations and commitments. In addition, a results-based plan will address uncertainty in the ecosystem and provide the conservation assurances required by the Act. The Services will be challenged to make the findings required for permit issuance if the plan does not include clearly defined and scientifically supported biological goals and objectives, an adaptive management plan that tests alternative strategies for meeting those biological goals and objectives, and a framework for adjusting future conservation actions, if necessary, based on what is learned."</p> <p>(Federal Agencies White Paper on Application of the 5-point Policy to the Bay Delta Conservation Plan, April 29, 2010 at 1 ("BDCP 5-Point Policy Memo"), available online at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library_-_Archived/5_20_10_BDCP_SC_HO_5_pt_policy_BDCP_white_paper.sflb.ashx.)</p> <p>This memo also states that, "An agreement to simply implement specific actions is not sufficient to support the finding unless the analysis demonstrates at the outset a reasonable likelihood that the actions will be successful." Id. at 1.</p> <p>Both NMFS and USFWS have reaffirmed these principles more recently. For instance, NMFS' April 4, 2013 Progress Assessment concludes that,</p> <p>"Implementation of the Conservation Measures as initially described in the plan does not constitute the extent of the responsibilities of the Authorized Entities. Achieving the outcomes described in the objectives is the primary responsibility of those implementing the plan."</p> <p>(NMFS 2013 Progress Assessment at 20.)</p> <p>That document also states that, "Continuing to achieve objectives is necessary for progress toward recovery of covered species and in many cases will be required for compliance with the terms of the BDCP permit." Id. at 19. The U.S. Fish and Wildlife Service provided similar comments in its 2013 Progress Assessment, reaffirming the 2010 memo and stating that,</p> <p>"In an outcome-based plan, biological objectives provide targets that conservation measures are expected to reach, thereby contributing to the conservation outcomes required by the permit. If the objectives have been appropriately crafted, their achievement assures that a project is doing what it can to contribute to the accomplishment of the ultimate biological goals of the plan. If the CMs fail to achieve the biological objectives around which they are designed, then the plan must provide the means (adaptive management) to change the Conservation Measures to achieve the outcomes.</p> <p>"We are concerned about the ability of the draft BDCP to successfully facilitate adaptive management."</p> <p>(USFWS 2013 Progress Assessment at 25-26.)</p> <p>In addition, the document states that, "the plan needs to clearly articulate that achieving biological objectives is the whole basis of the conservation plan. Achieving and continuing to</p>	<p>required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the California Natural Community Conservation Planning Act (NCCPA), and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project.</p>

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		<p>achieve objectives will be necessary for progress toward the biological goals and recovery of covered species, and may be required for compliance with the HCP permit." Id. at 25.</p> <p>In virtually every respect, the proposed assurances violate the 5 Point Policy and these conclusions of the federal fishery agencies. The Draft IA proposes that the implementation of Conservation Measures--rather than achievement of biological objectives--shall be the only obligation of the plan proponents and Permittees. Compare Draft IA at 24 with BDCP 5-Point Policy Memo at 1; see NMFS 2013 Progress Assessment at 19, 20. As discussed extensively in sections III and IV of these comments, while BDCP has developed draft biological goals and objectives, the Draft Plan and Draft IA are unlikely to achieve these biological objectives.</p> <p>By establishing a wholly action based HCP, despite the fishery agencies' conclusions regarding scientific uncertainty of conservation measures and the likelihood that the Draft Plan fails to achieve key biological objectives, the proposed assurances violate the ESA.</p>	
1723	41	<p>The Draft Plan and Draft Implementing Agreement cannot provide any assurances regarding upstream operations of the CVP and SWP.</p> <p>Even though the CVP/SWP are operated as an integrated unit from upstream reservoirs to operations in the Delta, BDCP proposes to limit the geographic scope of the Draft Plan largely to the legal Delta, excluding upstream operations from covered activities. In our initial scoping comments, we strongly recommended that BDCP revise the geographic scope to include upstream operations, to no avail. Given the adverse impacts of climate change and CVP/SWP operations, particularly upstream reservoir operations, upstream operations of CVP/SWP facilities will have to be substantially changed from that modeled in BDCP in order to avoid causing jeopardy to listed species (either in the near term, or in the future). Because BDCP does not include upstream operations in the proposed project as a covered activity, the Draft Plan and Draft IA cannot legally provide any assurances regarding upstream reservoir operations, even if changes to upstream operations substantially reduce Delta exports in the future. The Draft Plan and Draft IA must be revised to specifically recognize that there are no assurances under the ESA or NCCPA provided regarding upstream operations of the CVP and SWP, and that changes to upstream CVP/SWP operations may result in substantial reductions in water supply under BDCP as compared to that modeled in the Draft Plan.</p>	Please see response to comment 1723-40 regarding the Draft Implementing Agreement.
1723	42	<p>The Draft Plan and Draft Implementing Agreement provide assurances to CVP contractors and to U.S. Bureau of Reclamation (USBR) in violation of the No Surprises Rule, which prohibits providing No Surprises assurances to Federal Agencies.</p> <p>As we previously discussed in our March 2011 memorandum to the state and federal agencies, the Endangered Species Act (ESA) prohibits providing "No Surprises" assurances to the Bureau of Reclamation:</p> <p>"Critically, 50 CFR Sec. 17.22(b)(5), which codifies HCP regulation, states expressly that No Surprises assurances "cannot be provided to Federal agencies." When promulgated, the federal government stated that it was issuing the revised rules in part to clarify that No Surprises assurances "do not apply to Federal agencies who have a continuing obligation to contribute to the conservation of threatened and endangered species under section 7(a)(1) of the ESA." 63 Fed. Reg. 8867 (Feb. 23, 1998). In addition, the notion that the USFWS [U.S. Fish and Wildlife Service] and/or NMFS [National Marine Fisheries Service] would be precluded from imposing on a federal agency additional terms and conditions designed to</p>	Please see response to comment 1723-40 regarding the Draft Implementing Agreement.

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		<p>minimize or mitigate excessive take conflicts with the obligation to reinstate consultation under Section 7(a). Thus, the law expressly prohibits Reclamation and federal water contractors from obtaining Section 10 "No Surprises" assurances and prohibits the FWS/NMFS from approving permits that are structured to undermine the agencies' Section 7 obligations."</p> <p>(Memorandum from Environmental Defense Fund, Defenders of Wildlife, and National Resources Defense Council to the Resources Agency and U.S. Department of the Interior regarding Permittee Status for Water Contractors in BDCP, March 23, 2011 ("2011 Permittee Memo"), at 3; 50 C.F.R. [Section] 17.22(b)(5).)</p> <p>However, despite this explicit prohibition under the "No Surprises" rule, the Draft IA attempts to provide regulatory assurances to Reclamation:</p> <p>"In light of Reclamation's integral role in the BDCP, it is appropriate to provide to Reclamation a degree of certainty regarding its obligation to fund Conservation Measures, and to provide durability and reliability regarding BDCP implementation. In that regard, USFWS and NMFS agree that once the Integrated Biological Opinion has been issued: (1) to the maximum extent allowed by law, Reclamation's ongoing responsibilities for Associated Federal Actions under Section 7(a)(2) of the ESA will be fulfilled through Reclamation's participation in the BDCP, including through the obligations it has assumed under the adaptive management and the Changed Circumstances provisions of the Plan; and (2) USFWS and NMFS agree that Reclamation will not be required to provide additional commitments or measures for Associated Federal Actions beyond those set forth in the BDCP without first attempting to resolve issues through the review process in Section 15.8, if invoked by an Authorized Entity, and exhausting processes set forth in Section 22.5 of this Agreement."</p> <p>(Draft IA at 50-51.)</p> <p>This is wholly inconsistent with section 7(a)(1) of the ESA and the "No Surprises" rule, and is unlawful. In order to fulfill its continuing obligations under the ESA, Reclamation must have the ability to provide additional water or money to meet the conservation needs of covered species.</p>	
1723	43	<p>The Draft Plan and Draft Implementing Agreement unlawfully propose to extend No Surprises assurances to Federal water contractors, in violation of the No Surprises Rule. Such assurances would not only limit the resources Federal water contractors will be required to contribute to the Draft Plan, but such assurances would effectively limit the water and other resources the Bureau of Reclamation could contribute to the Draft Plan. That is inconsistent with section 7(a)(1) of the Endangered Species Act (ESA) and the No Surprises rule, as we made clear in our November 2011 comments on the draft first amendment to the BDCP Memorandum of Agreement.</p> <p>Under the ESA, Federal agencies operate under Section 7, which does not contain any assurances similar to Section 10. The distinction between private landowners and Federal agencies reflects the latter's legal duty under section 7(a)(1) of the ESA, which provides that Federal agencies are under a "continual obligation to contribute to the conservation of threatened and endangered species." 63 Fed. Reg. 8859, 8867 (Feb. 23, 1998). Providing Federal CVP water contractors with Section 10 assurances contravenes the same continuing obligation placed on Federal agencies because it limits the water and other resources Reclamation will be expected to provide to the Plan. The Draft Plan and Draft IA fail to</p>	Please see response to comment 1723-40 regarding the Draft Implementing Agreement.

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		<p>explain how Reclamation can comply with its continuing obligations under section 7(a)(1) of the ESA, particularly the continuing duty (if needed) to provide additional water to meet environmental needs of listed species, if BDCP provides assurances to CVP contractors that there will be no additional impacts to CVP water supply: it is the same water, and the rights to that water are held by Reclamation. As such, the Draft Plan and Draft IA must be revised to avoid providing regulatory assurances to Reclamation and/or CVP contractors.</p>	
1723	44	<p>CVP and SWP contractors are not qualified as Permittees, and thus cannot obtain regulatory assurances.</p> <p>In addition to violating the No Surprises Rule, neither SWP nor CVP contractors are appropriate permittees who could obtain Section 10 assurances. See Permittee Memo. In addition, according to the HCP Handbook, "[t]he permittee must therefore be capable of overseeing HCP implementation and have the authority to regulate the activities covered by the permit." HCP Handbook at 3-2. Similarly, as part of the U.S. Fish and Wildlife Service Incidental Take Permit application, applicants are required to sign a notice which certifies that they</p> <p>"own the lands indicated in this application, or have sufficient authority or rights over these lands to implement the measures of the Habitat Conservation Plan (and Implementing Agreement if applicable) covered by the Incidental Take permit. Further, upon receipt of the Incidental Take permit, [the signatories] agree to conduct the activities as specified in the Habitat Conservation Plan (and Implementing Agreement if applicable) according to the terms and conditions of the Incidental Take permit and its supporting documents."</p> <p>(Department of the Interior: U.S. Fish and Wildlife Service, Incidental Take Permit Associated with a Habitat Conservation Plan Application Form (Rev. October 2013) at 12, available online at http://www.fws.gov/forms/3-200-56.pdf.)</p> <p>This provision ensures that permittees will have sufficient authority to implement the HCP's conservation measures.</p>	<p>Please see response to comment 1723-40 regarding the Draft Implementing Agreement.</p>
1723	45	<p>The state and federal water contractors lack sufficient authority over either the land or operations of the CVP and SWP to qualify as a permittee under the ESA. See Permittee Memo. The existing CVP and SWP facilities are owned by the State and Federal Governments, and any new water conveyance infrastructure will be owned and operated by the Department of Water Resources (DWR). See Draft Plan at 8-70. Furthermore, the water rights associated with the BDCP, SWP, and CVP will not be held by the water contractors, and are instead held by DWR and USBR. See, e.g., Water Rights Decision 1641 (December 29, 1999) at 146-149. And state and federal agencies, not the water contractors, control operations of diversion facilities, consistent with existing law. See, e.g., id. at 132 ("Only the DWR and the USBR can implement the objectives for operational constraints in the 1995 Bay-Delta Plan. The objectives for export pumping rates are the responsibility of each of the two projects at their respective facilities. The objectives for Delta Cross Channel operation are the sole responsibility of its owner, the USBR."); Permittee Memo at 4-5.</p> <p>Because the state and federal water contractors do not have adequate authority to implement the Draft Plan, including lacking any authority to implement conservation measures relating to CVP/SWP operations and/or affecting CVP/SWP water rights as well as lacking any authority over lands in the Delta, they do not qualify as permittees and they cannot therefore obtain No Surprises assurances. [Footnote 11: The same logic extends to</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Where the alternative does not include preparation of an HCP, ESA compliance for construction and operation of water intakes in the north Delta and associated conveyance facilities would be achieved solely through Section 7. For these alternatives, USFWS and NMFS would not issue a permit and would not act as a lead agency for NEPA compliance. Where Section 7 is the ESA compliance strategy, USFWS and NMFS will assume roles as cooperating agencies for purposes of the NEPA review.</p> <p>Reclamation would be the lead federal action agency for Section 7 compliance where a non-HCP alternative is selected. Reclamation's Section 7 compliance would be expected to also address the Section 7 compliance needs for the USACE permit actions. In cooperation with DWR, Reclamation would prepare a biological assessment (BA) for submission to USFWS and NMFS requesting formal consultation under ESA Section 7.</p> <p>The State Water Resources Control Board, not DWR, is responsible for decisions relating to water rights. DWR holds water rights approved by the State Water Resources Control Board but does not have the power or authority to issue water rights to others. Additionally, the proposed project does not seek any new water rights or include any regulatory actions that would affect water rights holders other than DWR, Reclamation, and SWP and CVP contractors.</p>

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		permits and assurances provided under the NCCPA.]	<p>Importantly, all water exported by the SWP and CVP is the subject of the existing water rights of those two agencies. Exports do not come at the expense of other water rights holders. The proposed project and its alternatives analyzed in the EIR/EIS only include the use of water from existing SWP and CVP water rights or voluntary water transfers from other water rights holders. The proposed project and its alternatives do not reduce the protections for other water right holders.</p> <p>For more information regarding changes in delta exports please see Master Response 26.</p>
1723	46	<p>The Draft Plan fails to comply with the Central Valley Project Improvement Act, Bay Delta Water Quality Control Plan, and provisions of the Fish and Game Code regarding salmon doubling.</p> <p>Despite the fact that our organizations have reiterated for years that any lawful BDCP must meet salmon doubling requirements in state and federal law, the Draft Plan fails to acknowledge the applicability of these requirements. See, e.g., Letter to Lori Rinek, U.S. Fish and Wildlife Service, from Natural Resources Defense Council, The Bay Institute, Defenders of Wildlife, Environmental Defense Fund (May 14, 2009) (incorporated herein by reference). The Draft Plan's omission indicates a failure to meet these requirements, but does not lessen the requirement that the Plan provide for salmon doubling. Cf. Draft Plan at 1-6 to 1-20.</p> <p>The federal Central Valley Project Improvement Act imposes an anadromous fish-doubling goal on operations of the CVP that is long overdue. [Footnote 12: In addition, the Draft Plan fails to incorporate Level 4 water deliveries to the wildlife refuges, despite the requirements of the CVPIA. See P.L. 102-575, [Section] 3406(d). As discussed infra, the DEIS/DEIR and Draft Plan also omit Level 4 refuge water supply from the environmental baseline.] The CVPIA directs DOI to develop and implement a program that makes "all reasonable efforts" to ensure and sustain on a long-term basis a doubling of the number of naturally produced anadromous fish in Central Valley rivers and streams, using the average levels attained during the period of 1967-1991 as the baseline. P.L. 102-575, [Section] 3406(b)(1). The plan was due by 1995, and the doubling goal was supposed to have been met by 2002. It has not been met. See, e.g., CVPIA Independent Fisheries Review Panel 2008, "Listen to the River: An Independent Review of the CVPIA Fisheries Program," ("CVPIA Fisheries Review 2008") available online at http://www.usbr.gov/mp/cvpia/docs_reports/indep_review/FisheriesReport12_12_08.pdf, incorporated by this reference.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 1 regarding the environmental baseline for the EIR/EIS.</p>
1723	47	<p>As the Central Valley Project Improvement Act Independent Science Panel noted, the Department of the Interior has yet to take on its environmental mission with the same "zeal" that it brings to its water supply responsibilities. The CVPIA Fisheries Review 2008 states that "After 16 years of implementation the CVPIA anadromous fish program is not close to its stated doubling goal, nor has it solved the problems that led to the listing of several species of salmon and steelhead under the ESA." The report concludes that DOI:</p> <ul style="list-style-type: none"> - Has not developed a proper conceptual foundation and framework for the program; - Has organized and managed the program in a compartmentalized way rather than an integrated, systematic and scientific way; - Has not addressed key fisheries problems at the systems level; 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise any specific issues with the EIR/EIS.</p>

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		<ul style="list-style-type: none"> - Has failed to prioritize and address effectively the problems in the Delta; - Has substantially underutilized CVPIA authorities, especially with regard to water management and the issues in the Delta. 	
1723	48	<p>The Panel was particularly severe in discussing the Department of the Interior's reticence to use its Section 3406(b)(2) authority to make more water available for salmon:</p> <p>"An excellent example of the agencies' constrained approach to their authorities is how the agencies have implemented Section 3406(b)(2)...When viewed in combination with the broad directive in Section 3406(b)(1)(B) to "modify Central Valley Project operations to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish," for which the 800 kaf [kilo acre-feet] is one explicit tool, the panel expected to find that implementation of 3406(b)(2) had occurred in this way: The agencies identify 800 kaf of dedicated storage in the system -- essentially, a water volume budget -- and then consistent with an identified system-wide flow regime to improve conditions for anadromous fish, Reclamation would release this stored water in requested amounts at the call of the fish managers and then protect that amount of altered flow through the rivers, through the Delta, and into the bay.</p> <p>"We were flabbergasted to learn this is not how the agencies implement this provision. The agencies have not identified a system-wide flow regime and set of system flow objectives. Worse, Reclamation does not dedicate and manage 800 kaf of water from headwaters storage through the Delta. Instead, Reclamation releases approximately 400 kaf from CVP storage each year, aimed at supporting the needs of particular life stages at particular locations. These augmented amounts are then diverted out of the system at a later point. The 800 kaf accounting then includes approximately 400 kaf realized in pump restrictions in the Delta. This approach seems fundamentally at odds with the intent and language of the legislation."</p> <p>(Id. (emphasis in original).)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise any specific issues with the EIR/EIS.</p>
1723	49	<p>The Ninth Circuit Court of Appeals has similarly and repeatedly made clear that the Department of the Interior (DOI) has failed to implement this mandate, which it is required to meet by law, holding in <i>San Luis & Delta Mendota Water Authority v. U.S.</i>, 672 F.3d 676 (9th Cir. 2012) that:</p> <ul style="list-style-type: none"> - The Central Valley Project Improvement Act (CVPIA) establishes its own "restoration mandate" distinct from the environmental protections provided for in other statutes. - The concept of primary purpose cannot be untethered from CVPIA's restoration mandate. - The CVPIA distinguishes between the "primary restorative purpose (on the one hand) and those of water quality protection and meeting other legal obligations such as the ESA (Endangered Species Act) (on the other)." This distinction: "clearly demonstrates that an action taken to meet water quality criteria and/or ESA requirements does not, by itself, fall within the category of a (b)(2) primary purpose." - It is improper for DOI to relegate "water needed for implementation of the Improvement Act's restoration mandate" to a secondary role. 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise any specific issues with the EIR/EIS.</p>

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		<ul style="list-style-type: none"> - Crediting of ESA/WQCP (Water Quality Control Plan) releases to the (b)(2) account is only appropriate when such releases "predominantly" overlap with actions taken for the primary (b)(2) purpose. - DOI's December 2003 Guidance is invalid in its characterization of the 1995 WQCP. - Not every measure taken to protect some species of fish and wildlife automatically becomes a primary purpose under (b)(2). Thus, merely because a water quality release is made for some environmental purpose does not mean that it qualifies as a (b)(2) primary purpose action: "primary purpose is narrower than the 2003 Guidance Memo suggests. It consists... Only of those restoration measures which are specifically enumerated in Section 3406(b)(2) of the CVPIA." - DOI could have limited confusion and controversy by implementing a more coherent set of accounting procedures after it became aware of the Jan. 2004 9th Circuit Decision. 	
1723	50	<p>The Bay-Delta Water Quality Control Plan likewise imposes a water quality objective requiring that,</p> <p>"Water quality conditions shall be maintained, together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provisions of State and federal law."</p> <p>(See State Water Resources Control Board, Final Water Quality Control Plan for the San Francisco Bay San Joaquin River Delta, December 13, 2006, at 14, available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/2006wqcp/docs/2006_plan_final.pdf (and hereby incorporated by reference).)</p> <p>The State Water Resources Control Board's review of BDCP must demonstrate that the Draft Plan is consistent with achievement of this objective. See also Water Code [Sections] 13050(j)(3), 13242(a); In re State Water Resources Control Board Cases, 136 Cal.App.4th 674, 775 (2006). Likewise, Salmon doubling is also a stand-alone requirement of State law. Section 6902 of the Fish and Game Code establishes as State policy that the State shall "double the current natural production of salmon and steelhead trout resources" and that existing salmon and steelhead habitat shall not be further diminished. Similarly, section 5937 of the Fish and Game Code is a long-standing provision of State law that requires the operator of any dam, including state and federal governments, to provide sufficient water at all times to pass over or around the dam to restore and maintain naturally-producing populations of native fish in good condition. See, e.g., Natural Resources Defense Council v. Patterson, 333 F.Supp.2d 906 (E.D. Cal. 2004).</p> <p>The Draft Plan can and must be revised to address these long-overdue requirements, include salmon doubling as an achievable biological objective, and address how the Department of the Interior and DWR will meet their salmon doubling obligations in the context of BDCP.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise any specific issues with the EIR/EIS.</p>
1723	51	<p>The Draft Plan fails to comply with water quality and water rights requirements under state law.</p> <p>The Draft Plan acknowledges that the State Water Resources Control Board has extensive independent authority to determine legal obligations that directly affect BDCP. These</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As described in Appendix 3A, Section 3A.9.3, of the FEIR/EIS the State Water Resources Control Board prepared a Delta Flow Criteria Report in accordance with the requirements of the Sacramento-San Joaquin</p>

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		<p>include the SWRCB's ongoing (and long overdue) update of the Bay Delta Water Quality Control Plan, including flow standards necessary to protect the fish, aquatic, and wildlife resources, and agricultural and domestic supply in the Delta; and review and permitting of the Plan's proposed change in point of diversion, which may not cause injury to any legal user of the water involved, including fish and wildlife. Draft Plan at 1-19 to 1-20. The Draft Plan asserts that the "State Water Board's participation in the development of the BDCP and in the environmental review process is intended to ensure consistency between the actions described in the BDCP and those required by the State Water Board." Draft Plan at 1-20. Despite this assertion, the Draft Plan utterly fails to address or account for anticipated changes under an updated water quality control plan and change in point of diversion review. This is most apparent in the Plan's failure to adequately incorporate and address the Board's recognition of the need for significantly increased flows into and through the Delta, as indicated by its 2010 public trust flows report and numerous comments provided during BDCP development. See Water Code [Section] 85086(b) and (c) (public trust flow criteria should inform the BDCP and related Delta planning decisions); State Water Resources Control Board, Final Report, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, August 3, 2010 ("SWRCB 2010 Flow Report"), available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/fina_l_rpt080310.pdf. Instead of acknowledging this input and providing for increased flows at critical times of the year for imperiled fish, the Draft Plan asserts without adequate justification that exports cannot be reduced to a level sufficient to protect and restore fish and wildlife. But the Plan bases this false conclusion on its failure to adequately consider alternative sources of water supply available to exporters, which would enable diversions from the Delta to be significantly reduced while maintaining a reliable and adequate water supply. [Footnote 13: The Draft Plan's failure to consider alternative water supply and demand reduction measures in export areas violates several other legal requirements, as well, including the failure to consider an adequate range of alternatives, failure to comply with requirements of the Delta Reform Act of 2009, and failure to consider alternatives to take, to name just a few. This failure is especially egregious in light of the fact that the Draft Plan proposes these very same alternative water supply and demand reduction measures for in-Delta diverters as a proposed form of mitigation for imposing degraded water quality conditions on those water users. DEIS/DEIR Appendix 3B at 3B-43.]</p>	<p>Delta Reform Act of 2009. Information from that report included "determinations of flow criteria for the Delta ecosystem to protect public trust resources. The report makes clear, however, that the flow criteria do not consider the balancing of public trust resource protection with public interest needs for water. The flow criteria also did not consider other public trust resource needs such as the need to manage cold-water resources in reservoirs tributary to the Delta. Nonetheless, the flow determinations contained in the Delta Flow Criteria Report, together with recent scientific conclusions of other State and federal agencies, including the Department of Fish and Wildlife, National Marine Fisheries Service, and the Interagency Ecological Program provide a useful guide to establish one side of a reasonable range of alternatives" (State Water Resources Board letter dated April 19, 2011). The information in the flow criteria report was used to inform the development of the proposed project.</p> <p>On August 27, 2015 DWR and USBR submitted the change petition to SWRCB. This is a petition for a change to the water rights necessary to allow for the implementation of key components of the California WaterFix, jointly submitted by the Department of Water Resources and the Bureau of Reclamation. The petition requests the State Water Resources Control Board (SWRCB) approval to add points of diversion and redirection to the existing water right permits (and existing diversion authorization) held by the State Water Project and Central Valley Project. The petition is limited in scope to the change in the point of diversion, and leaves intact all existing places of use, manner of use, other existing points of diversion, quantities of diversion and other water rights terms and conditions identified in Water Rights Decision 1641.</p> <p>The submittal of the petition starts a public process expected to include a hearing and opportunity for comment by interested parties meeting certain SWRCB requirements. The SWRCB will evaluate the project's potential to injure legal users of water, ability to meet existing water quality requirements, and an assessment of potential effects on fish and wildlife. The SWRCB will also include within any approval of the petition "appropriate Delta flow criteria" as required by the Delta Reform Act.</p> <p>Please also see Appendix C of the RDEIR/SDEIS Supplemental Modeling Requested by State Water Resources Control Board Related to Increased Delta Outflows.</p> <p>For more information regarding public trust please see Master Response 13.</p> <p>For more information regarding alternatives to the proposed project please see Master Response 4. For more information regarding demand management please see Master Response 6.</p>
1723	52	<p>The Draft Plan must be revised to assess the proposed project's ability to meet the significantly increased flows necessary to protect and restore covered species in light of the abundant and affordable alternative water supply sources available to exporters. See, e.g., Natural Resources Defense Council and the Pacific Institute, "The Untapped Potential of California's Water Supply: Efficiency, Reuse, and Stormwater," June 2014, available online at http://www.nrdc.org/water/ca-water-supply-solutions.asp (incorporated herein by reference); 2013 update to bulletin 160 at http://www.waterplan.water.ca.gov/previous/b160-98/TOC.cfm (incorporated herein by reference); USBR, CVP Integrated Resource Plan (2014) at http://www.usbr.gov/mp/SSJBasinStudy/documents/cvp_integrated_resource_plan_summ_v2.pdf (incorporated herein by reference).</p> <p>Even if it is beyond the scope of the Draft Plan to analyze these alternative water supply options in detail, the Plan may not simply pretend that these planned future investments and options do not exist and fail to consider them, especially in light of the state policy to reduce reliance on Delta water exports by investing in efficiency, recycling, advanced water technologies, local and regional water supply projects. See Water Code [Section] 85021. Indeed, the Draft Plan itself proposes to reduce adverse water supply impacts for in-Delta</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As described in the comment, the action alternatives were developed to address the Project Objectives and Purpose and Need, as described in Chapter 2 of the BDCP EIR/EIS. The proposed project is just one element of the state's long-range strategy to meet anticipated future water needs of Californians in the face of expanding population and the expected effects of climate change. The proposed project is not a comprehensive, statewide water plan, but is instead aimed at addressing many complex and long-standing issues related to the operations of the SWP and CVP in the Delta. It is important to note that the proposed project is not intended to serve as a state-wide solution to all of California's water problems, and it is not an attempt to address directly the need for continued investment by the State and other public agencies in conservation, storage, recycling, desalination, treatment of contaminated aquifers, or other measures to expand supply and storage (as described in Section 1.C.3 of Appendix 1C, Demand Management Measures).</p>

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		<p>water users imposed by the Plan's adverse water quality impacts by:</p> <p>"Develop[ing] demand management and/or conservation/recycling projects to extend available water supplies (municipal uses). Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of Delta diversion facilities when water quality is poor allowing for more efficient use of other existing water supplies."</p> <p>(DEIS/DEIR Appendix 3B at 3B-43.)</p> <p>Of course, these measures would also "help reduce use of Delta diversion facilities" by export water users to enable reduced diversions from the Delta to meet ecosystem and species protection needs. Moreover, DWR and the Department of the Interior have already acknowledged that they can choose to include and analyze the impact of measures taken outside of the Delta in this BDCP analysis. 74 Fed. Reg. 7257 (Feb. 13, 2009) ("it may be necessary for the BDCP to include conservation actions outside of the Statutory Delta that advance the goals and objectives of the BDCP within the Delta.... The EIS/EIR project area for which impacts are evaluated may be different than the BDCP geographic scope."); DWR Notice of Preparation (Feb. 13, 2009) ("The EIR/EIS project area for which impacts are evaluated may be different than the BDCP geographic scope."). There is no reasonable excuse to artificially limit the scope of the analysis in the manner chosen by the Draft Plan.</p>	
1723	53	<p>As noted in the attached analysis by the University of Southern California, "Water Supply Scarcity in Southern California: Assessing Water District Level Strategies," the expensive price tag of the currently proposed BDCP is likely to negatively affect the ability of local water districts and others to invest in efficiency, recycling, advanced water technologies, and other local and regional water supply projects. University of Southern California Center for Sustainable Cities, Water Supply Scarcity in Southern California: Assessing Water District Level Strategies, 2012, available online at http://sustainablecities.usc.edu/research/publications.html (incorporated by reference). That report finds that "[w]ith a projected costs of \$23.7 Billion to be paid by user fees, this project could foreclose other water supply options for Southern California." Id. at page x. Without a financing plan that explains how users will finance the proposed project, the Draft Plan does not and cannot accurately assess the impact of the proposed project on user fees in the future or the effect of that increase on other needed investments to meet state policy. This omission is significant, since "[t]he increasing price of imported water is [already] a major factor in local water agency efforts to conserve water and to invest in new water supply sources." Id. at page xi. As the report concludes, "Some investments, such as SWP proposed tunnels will preclude others due to financial constraints. Trade-off analysis and full-accounting ... should be included in such analyses." Id. at pages xxvi-xxvii.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The construction of the water delivery facilities is estimated to cost \$14.9 billion, an amount that would be paid for by the state and federal water contractors who rely on Delta exports. The range of costs for water vary widely among contractors south of the Delta. Costs depend on the source of water, transport facilities, energy requirements, among other factors. For the agricultural customers of the CVP, prices range from \$100 per acre-foot to more than \$400 per acre-foot. The Metropolitan Water District of Southern California, which buys water from the SWP, estimates that the cost of the proposed project would translate into about \$5.00 extra per household, per month in its service area. The final cost of water from the new conveyance facilities would be determined by numerous factors. A number of these significant factors, such as the project yield and allocation of costs, have yet to be determined. Please see Master Response 5 for information regarding funding of the proposed project.</p> <p>An updated cost-benefit analysis will be prepared outside of the CEQA/NEPA process.</p>
1723	54	<p>The Draft Plan proposes to violate existing water quality standards protecting fish and wildlife, and the Draft Plan identifies significant degradation in water quality for other users, including agricultural and municipal and industrial uses, and fails to propose adequate mitigation for such degradation, see DEIS/DEIR at ES-63 to ES-65 and Chapter 8 (identifying significant and unavoidable impacts to water quality from methylmercury, bromide, chloride, electrical conductivity, organic carbon, pesticides, and selenium). Many other commentators have identified significant flaws with the DEIS/DEIR's modeling of water quality impacts. The DEIS/DEIR and Draft Plan must propose operational changes and other feasible mitigation measures to address these significant impacts.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Alternative 4A would have substantially less effect on Delta water quality such that significant impacts were only identified for electrical conductivity (EC) at Emmatton and Prisoners Point, and mercury associated with the limited tidal habitat restoration that would be implemented. The significant impacts to EC are to be mitigated through real-time operations that could not be completely represented in the modeling on which the EC assessment is based.</p> <p>Please note, the Environmental Setting/Affected Environment for water quality has been updated. These</p>

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		<p>As currently drafted, the analysis fails to provide information or analysis sufficient to support the State Board's change in point of diversion permit or to address the reasonably foreseeable impact of strengthened flow standards under an updated Bay-Delta water quality control plan.</p>	<p>updates can be found in Chapter 8 Section 8.1 in the Final EIR/EIS (and within Appendix A Chapter 8 Section 8.1 in the RDEIR/SDEIS)</p> <p>For more information, please see Master Responses 14 and 15 regarding the project's effects on water quality.</p>
1723	55	<p>The Draft Plan violates the State's obligations under the Public Trust Doctrine.</p> <p>The Draft Plan fails to adequately consider and protect against the Plan's adverse impacts on public trust resources, as it must. The Draft Plan does an insufficient job of addressing and incorporating the public trust flow criteria developed by the State Board in 2010, despite the fact that the Legislature specifically called for these flow criteria to be developed to inform the BDCP, any change in point of diversion permit, and other Delta planning decisions. Water Code [Section] 85086(b) and (c). This renders the Plan's analysis insufficient to support the State Board's subsequent issuance of a change in point of diversion permit. However, the failure to adequately consider and protect public trust resources is also a violation of DWR's independent obligation to do so as a trustee state agency. "The State can no more abdicate its trust over property in which the whole people are interested ... than it can abdicate its police powers."</p> <p>Illinois Central Railroad Co. v. Illinois, 146 U.S. 387, 452 (1882). Indeed, DWR and other state agencies have "an affirmative duty to take the public trust into account ... and to protect public trust uses whenever feasible." Nat'l Audubon Soc'y v. Superior Court, 33 Cal. 3d 419, 446 (1983).</p> <p>The State holds title as trustee of the public trust for the benefit of the People of California. Colberg, Inc. v. State, 67 Cal.2d 408, 416 (1967). The State also has a duty to supervise and administer the trust so that the public may continue to use navigable waterways, like the Delta, for public trust purposes. While the obligation extends to preserving public trust uses where feasible, the failure to adequately assess alternative water supply options means that the Plan utterly fails to assess the feasibility of significantly reducing exports from the Delta over the next 70 years (50-year plan duration plus approximate permitting and construction period). The Draft Plan violates DWR's and other state agencies' public trust obligations and must be modified to incorporate feasible protections sufficient to protect and restore native fish and other public trust resources.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative and Master Response 13 regarding how the BDCP is in compliance with the public trust doctrine protections and requirements of the State.</p>
1723	56	<p>The Draft Plan fails to comply with the Delta Reform Act.</p> <p>The 2009 Delta Reform Act established several requirements that BDCP fails to comply with. First, the Act prohibits any public funding for BDCP unless it complies with the NCCPA, CEQA, and specific provisions of the Act. Cal. Water Code [Section] 85320(b). However, because the Draft Plan violates the NCCPA, see supra, and violates CEQA, see infra, approval of the Draft Plan and provision of any public funding would violate the Delta Reform Act. Second, as discussed extensively in these comments, BDCP fails to identify the "operational criteria and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses." Water Code [Section] 85320(b)(2)(A). Third, BDCP fails to comply with the Delta Reform Act's requirement to reduce reliance on the Delta:</p> <p>"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</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative and response to comment 1723-40 regarding the Draft IA.</p> <p>Also, please see Master Response 31 regarding compliance with the Delta Reform Act.</p>

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		<p>regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."</p> <p>(Cal. Water Code [Section] 85021.)</p> <p>Appendix 3I of the DEIS/DEIR, which addresses BDCP compliance with the Delta Reform Act, wholly omits any discussion of section 85021 of the Delta Reform Act. At a minimum, the Draft Plan and DEIS/DEIR fail to demonstrate how BDCP complies with this mandate.</p> <p>Fourth, as discussed above, the Draft Plan and Draft IA do not require achievement of the Draft Plan's biological objectives, instead only requiring implementation of the conservation measures. This is inconsistent with the requirements of the Delta Reform Act, which requires that the fishery agencies "ensure" that biological performance measures "are achieved." See Water Code [Section] 85321 ("The BDCP shall include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations.").</p>	
1723	57	<p>The DEIS/DEIR violate CEQA and NEPA.</p> <p>The fundamental purpose of CEQA and NEPA is to ensure that agencies consider, mitigate, and disclose to the public potentially significant adverse impacts on the environment before approving or implementing a project. Their requirements are not mere hoops to jump through, but are intended "to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." Friends of Mammoth v. Board of Supervisors, 8 Cal.3d 247, 259 (1972). As articulated by the legislature, CEQA is designed to prevent public agencies from approving projects if "feasible" alternatives or mitigation measures would substantially lessen the significant environmental effects." Pub. Res. Code [Section] 21002. Another key goal is to inform decision makers and the public about the potentially significant environmental effects of proposed projects. See, e.g., 14 Cal. Code Regs. [Section] 15002. Finally, CEQA and NEPA both require consideration of a reasonable range of alternative actions that might achieve similar goals with less environmental impact. See, e.g., 40 C.F.R. [Section] 1502.14. In several key respects, the DEIS/DEIR violate fundamental provisions of CEQA and NEPA. First, the DEIS/DEIR uses flawed environmental baselines which understate the environmental impacts of the Draft Plan and Alternatives and fail to inform the public and decision makers of the actual impacts. Second, the DEIS/DEIR fail to include a reasonable range of alternatives, and rely on unreasonably narrow purpose and need statement to exclude reasonable alternatives. Third, the DEIS/DEIR fails to adequately analyze cumulative impacts. Fourth, the geographic scope of the DEIS/DEIR violates CEQA by excluding analysis of impacts to San Francisco Bay. Finally, the DEIS/DEIR fails to use sound science and provide accurate information to the public and decision makers regarding potential impacts of the State's proposed plan (Alternative 4), and the DEIS/DEIR's conclusions regarding several impacts are not supported by substantial evidence and understate the true environmental impacts. Because feasible mitigation measures are available, including changes to CVP/SWP operations and investments in local and regional water supplies that reduce reliance on the Delta, the DEIS/DEIR must be revised to incorporate such mitigation measures.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The alternatives included in the EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The Lead Agencies carefully considered all potential alternatives that were proposed during the scoping process and during time of preparation of the EIR/EIS.</p> <p>The text of the Draft EIR/EIS in Chapter 3 (section 3.2) and Appendix 3A to that document thoroughly explain the process used to develop the alternatives, and explain why certain potential alternatives were considered but ultimately rejected by the Lead Agencies. See Master Response 4 for additional information on the selection of alternatives.</p> <p>The proposed project has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholders and independent scientists, and more than 600 public meetings, working group meetings and stakeholder presentations/ Q&As. Documents, studies, administrative drafts, and meeting materials— more than 3,000 documents – have been posted online since 2010 in a commitment to public access and government transparency. In 2010, the first administrative draft of the BDCP was released to the public. In 2012, the second administrative draft BDCP and the first administrative draft of the EIR/EIS were released to the public. The second administrative draft of the EIR/EIS was released to the public in the spring of 2013. Prior to the December 2013 release of the public review Draft EIR/EIS, the proposed project was significantly revised in response to stakeholder involvement and engineering optimization efforts. The publication of the public draft BDCP and associated Draft EIR/EIS in December of 2013, represented the lead agencies consensus that the Draft Plan and associated Draft EIR/EIS satisfied all applicable environmental laws and regulations and provided an adequate analysis of the potential impacts and mitigation measures such that the public, stakeholders, and decision-makers had ample information and analysis to review and provide thoughtful and substantive comments. The publication of the RDEIR/SDEIS in 2015 provided refinements to the proposed project in response to public comments on the 2013 EIR/EIS, including 3 new action alternatives.</p> <p>Please see Master Response 1 regarding the environmental baselines for the EIR/EIS, Master Response 9 for</p>

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			<p>information on the cumulative impact analysis, and Master Response 40 regarding public outreach adequacy.</p> <p>Regarding the geographic scope the analysis in the EIR/EIS. The study area is generally defined in Chapter 1 of the EIR/EIS but as stated in this chapter the study area differs by chapter where the potential for impacts may extend beyond the general study area. For example, Chapter 8 of the EIR/EIS, Water Quality, evaluates impacts from the project on water quality in the San Francisco Bay and Chapter 11, Fish and Aquatic Resources, evaluates potential effects in San Francisco Bay.</p>
1723	58	<p>The DEIS/DEIR use an illegal baseline that understates the likely adverse environmental impacts of the Draft Plan and alternatives.</p> <p>Both NEPA and CEQA require that the Project be analyzed against the existing environmental conditions (the "environmental baseline"), in order that the Project's environmental impacts can be meaningfully analyzed and compared to alternatives. 40 C.F.R. [Section] 1502.15; CEQA Guidelines [Section] 15125(a); see County of Amador v. El Dorado County Water Agency, 76 Cal.App.4th 931, 952 (1999); Neighbors for Smart Rail v. LA County Metropolitan Transit Authority, 57 Cal. 4th 310, 315 (2013). Under CEQA, the DEIR must "delineate environmental conditions prevailing absent the project, defining a 'baseline' against which predicated effects can be described and quantified." Neighbors for Smart Rail, 57 Cal.4th 439, 447 (2013) (citing Communities for a Better Environment v. South Coast Air Quality Dist., 48 Cal.4th 310, 315 [2010]). The purpose is to provide a "realistic baseline that will give the public and decision makers the most accurate picture practically possible of the project's likely effects." Neighbors for Smart Rail, 57 Cal.4th at 449 (citing Communities for a Better Environment, 48 Cal. 4th at 322, 325, 328).</p> <p>The environmental baseline used in the draft BDCP and DEIS/DEIR fails to accurately assess the impacts of the proposed project, misleading decision makers and the public of the potential environmental impacts of the proposed project and alternatives in violation of NEPA and CEQA.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please refer to Master Response 1, which addresses the baseline approach for the EIR/EIS.</p>
1723	59	<p>The environmental baseline in the DEIS/DEIR omits implementation of floodplain habitat restoration in the Yolo Bypass and associated changes to weirs and infrastructure, despite existing permit requirements to implement these actions by 2020 as a mitigation measure for existing CVP/SWP operations. These habitat restoration projects will be implemented if no action is taken on BDCP, yet they are not included in the no action alternative. As a result, the DEIS/DEIR overstates the environmental benefits of the proposed project as compared to no action, and it substantially understates the environmental impacts of the proposed project as compared to no action.</p>	<p>Some of the alternatives in EIR/EIS that involve the BDCP include Yolo Bypass improvements. For these alternatives, these same or similar improvements were not included in the No Action Alternative to ensure that the BDCP alternative impact analyses fully capture the environmental effects that could result from the alternative in the Yolo Bypass. Including these improvements in both the No Action and action alternatives would have masked some of the environmental effects that are attributable to a BDCP alternatives. Yolo Bypass improvements are not part of the California WaterFix alternatives but are included in the No Action Alternative (ELT), used to assess NEPA effects. Please also refer to Master Response 1, related to the sufficiency of the EIR/EIS baseline approach.</p>
1723	60	<p>The environmental baseline in the DEIR (but not the DEIS) omits implementation of the "Fall X2" action required under the 2009 delta smelt Biological Opinion. This creates further confusion by creating two separate environmental baselines under NEPA and CEQA, and it results in the DEIR overstating the environmental benefits of the proposed project as compared to the no action alternative, and understating the environmental impacts of the proposed project as compared to the no action alternative.</p>	<p>Please refer to Chapter 4, Approach to Environmental Analysis for an explanation of the portions of the USFWS and NMFS BiOps included in existing conditions and Master Response 1 which addresses the environmental baseline.</p>
1723	61	<p>The draft BDCP uses a completely manufactured environmental baseline for Chapter 9 of the draft plan, which causes further confusion and is inconsistent with the baselines used in the DEIS/DEIR. [Footnote 14: In addition, the Draft Plan and DEIS/DEIR use an improper baseline for water deliveries to CVPIA wildlife refuges, failing to incorporate any Level 4</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The baseline condition in the BDCP is consistent with the Existing Conditions in the EIR/EIS which presents completed projects and ongoing policies as 2009 when the Notice of Intent and Notice of Preparation was</p>

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		<p>deliveries in the baseline. See DEIS/DEIR Appendix 3D at 3D-6.] Taken together, these flaws confuse the reader, undermining the intent of NEPA and CEQA, and result in the DEIS/DEIR overstating the environmental benefits and understating the environmental impacts of the proposed project.</p>	<p>published. The No Action Alternative in the Final EIR/EIS presents the projects and policies included in the Existing Conditions in addition to future projects that are certain to be implemented, including full implementation of the 2008 FWS and 2009 NMFS biological opinions, including increased frequency and duration of inundation of the Yolo Bypass (per the 2009 NMFS biological opinion) and implementation of Level 4 refuge water supply (per Central Valley Project Improvement Act [CVPIA]). The Existing Conditions, No Action Alternative, and all action alternatives include deliveries of Level 2 refuge water supplies from CVP water supplies at a higher priority than CVP water contract deliveries. In accordance with section 3406(d)(2) of the CVPIA, the increment of water between Level 2 and Level 4 water supplies are to be obtained by the Department of the Interior through measures that would not reduce CVP water contract deliveries. These measures could include water transfers based upon water conservation, purchase, lease, or donations, or providing additional water supplies such through conjunctive use, or a combination of these measures. As of 2009 (the basis for the No Action Alternative definition), long-term measures had not been implemented to provide long-term Level 4 refuge water supplies. Measures to provide Level 4 refuge water supplies would not change the CVP water deliveries simulated in the CALSIM II. Future water transfers for the refuges or other water users are not included in the No Action Alternative or action alternatives because it would be too speculative to project the volumes, patterns, or methods to convey the water between the sources and users. Separate engineering and environmental documents will be completed in the future and are not analyzed in the EIR/EIS.</p>
1723	62	<p>The DEIS/DEIR and Draft Plan provide misleading information because they fail to include required habitat restoration, including Yolo Bypass restoration, in the environmental baseline.</p> <p>The document violates NEPA and CEQA by failing to include required habitat restoration projects, including floodplain habitat restoration in the Yolo Bypass, in the environmental baseline in the DEIS/DEIR. These habitat restoration measures are required by the existing permits for SWP and CVP operations as a mitigation obligation, and they are required to be implemented regardless of whether BDCP moves forward. See, e.g., 2009 National Marine Fisheries Service Biological Opinion; 2008 U.S. Fish and Wildlife Service Biological Opinion; Draft Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan, September 2012; [Footnote 15: The draft plan and associated letters between the Bureau of Reclamation and National Marine Fisheries Service are available online at: http://www.usbr.gov/mp/BayDeltaOffice/Documents/yolo.html. These documents are incorporated by reference.] Notice of Intent, Draft Environmental Impact Statement/Environmental Impact Report for Yolo Bypass Salmonid Habitat Restoration and Fish Passage, California, 78 Fed. Reg. 14117 (March 4, 2013). The 2009 NMFS Biological Opinion includes specific criteria that must be achieved with respect to modifications to Freemont and Lisbon weirs, the amount of acreage that must be inundated as a result of restoration, and specific timelines for implementation. NMFS 2009 Biological Opinion at 607-611.</p> <p>Despite these existing legal requirements, the DEIS/DEIR does not include these measures in the no action alternative or in the environmental baseline for BDCP. See DEIS/DEIR at 3-44 to 3-45; Draft Plan at 5.2-6 to 5.2-8.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see response to comment 1723-59 regarding Yolo Bypass improvements and the environmental baseline.</p>
1723	63	<p>Yet the document also identifies significant environmental benefits from the Yolo Bypass restoration action, benefits that do not appear in the no action alternative despite the fact that these habitat restoration measures are required to be implemented regardless of the outcome of BDCP. See, e.g., DEIS/DEIR at 11-19, 11-278 to 11-281, 11-343, 11-345, 11-487 to 11-488; Draft BDCP Plan at 5.5.3-2 to 5.5.3-7, 5.5.3-41 to 5.5.3-47 (effects</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see response to comment 1723-59 regarding Yolo Bypass improvements and the environmental baseline.</p> <p>For more information regarding existing conditions, no action alternative, no project alternative, and</p>

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		<p>analysis of proposed project on winter-run Chinook salmon, concluding in particular that Yolo Bypass restoration under BDCP is highly beneficial for salmon). [Footnote 16: Confusingly, and without any analysis, the DEIS/DEIR claims that the Yolo Bypass restoration measures proposed under BDCP "go beyond those in the 2008 NMFS BiOp actions." DEIS/DEIR at 3-45. In contrast, Chapter 9 of the Draft Plan states that, "There is significant overlap in Yolo Bypass improvements between the NMFS 2009 BiOp and the USFWS 2008 BiOp and CM2. The CM2 estimate was reduced to 75% to account for this overlap." Draft Plan at 9-42. It appears that the Draft Plan includes the costs of implementing these habitat restoration requirements in the different baseline used in Chapter 9, even though they were not included in the baseline in the DEIS/DEIR or in other chapters of the draft plan. By omitting the Yolo Bypass restoration requirements of the 2009 NMFS Biological Opinion from the No Action Alternative, the DEIS/DEIR fails to provide the public and decision makers with the analysis to show the potential environmental consequences of CM2 versus the 2009 NMFS Biological Opinion requirements and to accurately demonstrate the environmental impacts of the proposed project and alternatives. In addition, as noted above, it appears that BDCP proposes to have the public pay for CM2 (Yolo Bypass restoration), despite the fact that this is a mitigation obligation of the CVP and SWP under existing Biological Opinions.] For instance, the draft plan concludes that, "The BDCP will provide improved adult and juvenile salmonid passage at Fremont Weir, increase the inundation period of the bypass, and enhance habitat conditions across the bypass itself." Draft Plan at 5.5.3-42. However, the 2009 National Marine Fisheries Service Biological Opinion requires each of these actions on a shorter time frame than BDCP. As a result, the exclusion of Yolo Bypass restoration from the environmental baseline is highly misleading and fails to accurately assess the environmental impacts of the proposed project and alternatives, including the no action alternative.</p>	<p>cumulative impact conditions please see Appendix 3D of the FEIR/EIS.</p>
1723	64	<p>For purposes of NEPA, the no action alternative in the BDCP DEIS/DEIR provides the environmental baseline, and the No Action Alternative, sometimes referred to as the Future No-Action Condition, considers No Action to include continuation of operations of the SWP [State Water Project] and CVP [Central Valley Project] as described in the 2008 U.S. Fish and Wildlife Service [USFWS] and 2009 National Marine Fisheries Service BiOps and Reasonable and Prudent Alternatives (RPAs) and other relevant plans and projects that would likely occur in the absence of BDCP actions." DEIS/DEIR at 4-5. Yet despite the fact that Yolo Bypass and other habitat restoration requirements of the 2008 USFWS Biological Opinion and 2009 NMFS Biological Opinion will "likely occur in the absence of BDCP actions," inexplicably, the DEIS/DEIR does not include the Yolo Bypass and other habitat restoration requirements of the Biological Opinions in the no action alternative. By failing to include the Yolo Bypass and other habitat restoration requirements in the No Action alternative, the DEIS overstates any environmental benefits of BDCP and understates the environmental impacts of BDCP. This fundamentally violates NEPA's purpose of informing the public and decision makers of the environmental consequences of a proposal and its alternatives. In order to comply with NEPA, the DEIR should be revised to include the Yolo Bypass and related requirements of the 2009 NMFS Biological Opinion and the habitat restoration requirements of the 2008 USFWS Biological Opinion in the no action alternative.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see response to comment 1723-59 regarding Yolo Bypass improvements and the environmental baseline.</p> <p>For more information regarding existing conditions, no action alternative, no project alternative, and cumulative impact conditions please see Appendix 3D of the FEIR/EIS.</p>
1723	65	<p>For purposes of CEQA, the environmental baseline generally is the existing conditions at the time of the Notice of Preparation. 14 Cal. Code Regs. [Section] 15125. However, the state Supreme Court's decision in <i>Neighbors for Smart Rail v. Exposition Metro Line</i> explains that this rule is not absolute, and "a departure from this norm can be justified by substantial evidence that an analysis based on existing conditions would tend to be misleading or without informational value to EIR users." 57 Cal. 4th 439, 457 (2013). The fundamental goal</p>	<p>Please refer to Master Response 1 regarding the environmental baseline.</p>

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		<p>is to ensure that, "CEQA analysis employ a realistic baseline that will give the public and decision makers the most accurate picture practically possible of the project's likely impacts." Id. at 449.</p>	
1723	66	<p>Footnote 5 of the court's opinion cited an example where use of the existing conditions as the environmental baseline could be misleading:</p> <p>"Amicus curiae South Coast Air Quality Management District provides a hypothetical example of factual conditions in which use of an existing conditions baseline would arguably mask potentially significant project impacts that would be revealed by using a future conditions baseline. In this illustration, an existing industrial facility currently emits an air pollutant in the amount of 1,000 pounds per day. By the year 2020, if no new project is undertaken at the facility, emissions of the pollutant are projected to fall to 500 pounds per day due to enforcement of regulations already adopted and to turnover in the facility's vehicle fleet. The operator proposes to use the facility for a new project that will emit 750 pounds per day of the pollutant upon implementation and through at least 2020. An analysis comparing the project's emissions to existing emissions would conclude the project would reduce pollution and thus have no significant adverse impact, while an analysis using a baseline of projected year 2020 conditions would show the project is likely to increase emissions by 250 pounds per day, a (presumably significant) 50 percent increase over baseline conditions."</p> <p>(Id. at 453, fn. 5.)</p> <p>As in this example from the court's opinion, in the draft BDCP exclusion of the requirement to restore floodplains in the Yolo Bypass from the environmental baseline misleads the public of the potential environmental effects. By omitting these existing mitigation requirements, an analysis comparing the project to existing habitat conditions in the Yolo Bypass would show significant increases in habitat, whereas using a baseline that includes the 2009 National Marine Fisheries Service Biological Opinion requirements relating to the Yolo Bypass would presumably show there would be little change from the baseline. This is critically important, as the DEIR claims that Yolo Bypass actions would have significant benefits for fish that may offset some of the impacts of other elements of BDCP (CM1); because Yolo Bypass restoration would necessarily occur with or without BDCP, this measure cannot offset impacts from Conservation Measure 1. [Footnote 17: As an example of how this misleads the public, at least one independent review of the Draft Plan and DEIS/DEIR have identified Yolo Bypass restoration as a mitigation measure to offset the impacts to salmon and other native fisheries, whereas a clear presentation of the Yolo Bypass restoration as part of the environmental baseline would not have mislead reviewers. Jeffrey Mount, William Fleenor, Brian Gray, Bruce Herbold, Wim Kimmerer. September 2013, Panel Review of the Draft Bay Delta Conservation Plan: Prepared for The Nature Conservancy and American Rivers ("Mount and Saracino et al. 2013"), at 2, 38-41, available online at: https://watershed.ucdavis.edu/files/biblio/FINAL-BDCP-REVIEW-for-TNC-and-AR-Sept-2013.pdf (noting that their review of the BDCP documents shows that BDCP will increase the frequency of inundation of the bypass and that the duration of inundation in the bypass would not change under the No Action Alternative). While we agree with many of the modeling and biological critiques in this report, we disagree in particular with the flawed legal analysis in Chapter 2 of that review.] The environmental baseline in the DEIR should be revised to include the requirements of the 2009 NMFS Biological Opinion relating to the Yolo Bypass (RPA Actions I.6.1 and I.7) and habitat restoration requirements of the 2008</p>	<p>Some of the alternatives in EIR/EIS that involve the BDCP include Yolo Bypass improvements. For these alternatives, these same or similar improvements were not included in the No Action Alternative to ensure that the BDCP alternative impact analyses fully capture the environmental effects that could result from the alternative in the Yolo Bypass. Including these improvements in both the No Action and action alternatives would have masked some of the environmental effects that are attributable to a BDCP alternatives. Yolo Bypass improvements are not part of the California WaterFix alternatives but are included in the No Action Alternative (ELT), used to assess NEPA effects. Please also refer to Master Response 1, related to the sufficiency of the EIR/EIS baseline approach.</p>

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		U.S. Fish and Wildlife Service Biological Opinion.	
1723	67	<p>The DEIR provides misleading information because it fails to include Fall X2 requirements in the environmental baseline.</p> <p>The DEIR improperly justifies the exclusion of the Fall X2 action of the 2008 U.S. Fish and Wildlife Service (USFWS) Biological Opinion from the environmental baseline in light of the state Supreme Court's decision in <i>Neighbors for Smart Rail v. Exposition Metro Line</i>. DEIS/DEIR at 4-4 to 4-5. Because the NEPA baseline appropriately includes the Fall X2 action from the 2008 USFWS Biological Opinion, the document unnecessarily confuses the public and decision makers with two separate baselines for comparison. Equally important, just as in the prior discussion of excluding the habitat restoration requirements of the Biological Opinions from the environmental analysis, this too is a case where excluding the Fall X2 action from the baseline leads to highly misleading analysis. At the time of the Notice of Preparation (as well as today), the Fall X2 requirement of the 2008 USFWS Biological Opinion was required to be implemented in every wet and above normal water year type by allowing greater outflow during the fall months than was previously required, in order to mitigate impacts of the CVP and SWP operations on delta smelt. Yet by omitting the Fall X2 action from the DEIR, the document makes it appear that BDCP results in the same or higher outflow in the fall months than under the status quo, and makes it appear that alternatives that do not include the Fall X2 action are similar to the status quo (rather than causing significantly increased environmental impacts, given the environmental benefits of the Fall X2 action). See, e.g., DEIS/DEIR at 11-1295 to 11-1298 (discussing different findings of the effects of Alternative 4 on delta smelt rearing habitat under NEPA and CEQA, concluding that, "The NEPA analysis is a better approach for isolating the effect of the alternative from the effects of sea level rise, climate change, future water demands, and implementation of required actions such as the Fall X2 requirement."). As with exclusion of the habitat restoration requirements of the two Biological Opinions, exclusion of the Fall X2 action from the CEQA baseline in the DEIR is misleading and confusing to the public and decision makers, and the DEIR should be revised to include the Fall X2 action in the CEQA baseline.</p>	<p>Please refer to Chapter 4, Approach to Environmental Analysis for an explanation of the portions of the USFWS and NMFS BiOps included in existing conditions and Master Response 1 which addresses the environmental baseline.</p>
1723	68	<p>The Draft Plan provides misleading information because it includes a wholly unjustified baseline for economic impacts and benefits.</p> <p>Chapter 9 of the Draft Plan includes two new, wholly invented baselines for comparison of economic impacts and benefits. See Draft Plan at 9.A-1 to 9.A-4; Draft Plan at 9-40 to 9-42. This is problematic both because it provides a grossly misleading assessment of the potential economic benefits of the proposed project and because it creates significant confusion for the public and decision makers about BDCP's effects more generally.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 5 for an explanation of the baseline used in the economic impact analysis in Chapter 9 of the BDCP.</p>
1723	69	<p>The baselines used in Chapter 9 of the Draft Plan are called the "Existing Conveyance High Outflow Scenario" and the "Existing Conveyance Low Outflow Scenario," and they are only used in Chapter 9 and related appendices. See <i>id.</i> These two alternatives result in very substantial reductions in Delta exports as compared to other alternatives, including the No Action Alternative (despite the fact that the Draft Plan does not, in fact, compare them to the No Action Alternative). See <i>id.</i> The Draft Plan provides no justification for using a radically different baseline for the economics analysis (Chapter 9) from the rest of the draft plan.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 5 for an explanation of the baseline used in the economic impact analysis in Chapter 9 of the BDCP.</p>
1723	70	<p>The baseline used in Chapter 9 of the Draft Plan is wholly misleading and without foundation. There is no justification for providing a separate baseline for the economic</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred</p>

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		<p>analysis from that used for the environmental analysis; the document should use a consistent baseline. By using this imaginary baseline that significantly reduces water exports, Chapter 9 estimates significant economic benefits relating to water supply that presumably would not occur when compared to an accurate baseline. Compare Draft Plan at 9.A-44 (Table 9.A-7, showing expected water supply benefits) with Draft Plan at 9.A-4 (Table 9.A-2, showing net benefits and costs). [Footnote 18: In addition to the flawed baseline, Chapter 9 includes many other substantial flaws, including: calculating economic costs and benefits out to 2075, even though proposed permits only run to 2065, see Draft Plan at 9.A-4; calculating water supply based on Early Late Term (2025) export levels, rather than the lower export levels resulting in the Late Long Term (2060), see Draft Plan at 9-16; failing to assign the cost of Yolo Bypass restoration to the water contractors as a mitigation measure, and unreasonably assigning the vast majority of costs associated with CM 2-21 to the public, see discussion supra; and by using inflated estimates of water demand in Southern California and inflated costs of alternative water supplies, as other commentators have argued. Each of these flaws tends to overstate the economic benefits of the proposed project, providing decision-makers and the public with misleading information. Accurately assessing economic costs and benefits are also important with respect to determining what alternatives are feasible. See 14 Cal. Code Regs. [Section] 15126.6(f)(1).] Chapter 9 should be revised to be consistent with the baseline recommended in these comments. In these three distinct ways, the Draft Plan and DEIS/DEIR use flawed environmental baselines that provide materially misleading information to the public and decision makers about the economic and environmental costs and benefits of the BDCP and alternatives. The documents must be revised to provide a consistent, legally adequate baseline in order to fulfill CEQA and NEPA's fundamental purpose of informing the public and decision makers of the likely environmental consequences of BDCP and its alternatives.</p>	<p>alternative.</p> <p>Please see Master Response 5 for an explanation of the baseline used in the economic impact analysis in Chapter 9 of the BDCP.</p>
1723	71	<p>The DEIS/DEIR fails to analyze a reasonable range of alternatives.</p> <p>CEQA and NEPA both require that a reasonable range of alternatives to the proposed project be considered in the environmental review process, including a no project alternative. Cal. Pub. Res. Code [Sections] 21002, 21061, 21100; tit. 14, Cal. Code Regs. ("CEQA Guidelines") [Section] 15126.6; 42 U.S.C. [Section] 4332; 40 C.F.R. [Sections] 1502.14, 1508.25(b). Unfortunately, the DEIS/DEIR fails to include a reasonable range of alternatives, particularly because it (a) fails to include a range of alternatives that achieve the standards of the Endangered Species Act (ESA), Natural Community Conservation Plan Act (NCCPA), and other environmental laws, consistent with BDCP objectives, and (b) includes no alternatives that include investments in water conservation, recycling, and other local supplies to improve water supply reliability and reduce reliance on the Delta. An alternative that includes both improved flows and investments in local water supplies is likely to result in substantial environmental benefits and improved water supply reliability, consistent with the overarching goals of BDCP, and the failure to include such an alternative violates CEQA. See <i>Citizens of Goleta Valley v. Board of Supervisors</i>, 52 Cal.3d 553, 566 (1990) (EIR must consider a reasonable range of alternatives that offer substantial environmental benefits and may feasibly be accomplished).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 4 for a discussion regarding the development of alternatives. The alternatives included in the Draft EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The specific proposals that were considered but ultimately rejected by the Lead Agencies are discussed in Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1. Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project.</p> <p>The proposed project is just one element of the state's long-range strategy to meet anticipated future water needs of Californians in the face of expanding population and the expected effects of climate change. The proposed project is not a comprehensive, statewide water plan, but is instead aimed at addressing many complex and long-standing issues related to the operations of the SWP and CVP in the Delta, including reliability of exported supplies, and the recovery and conservation of threatened and endangered species that depend on the Delta.</p> <p>Although components such as desalination plants and demand management measures have merit from a statewide water policy standpoint, and are being implemented or considered independently through the state, they are beyond the scope of the proposed project. It is important to note that the proposed project is not intended to serve as a state-wide solution to all of California's water problems, and it is not an attempt to address directly the need for continued investment by the State and other public agencies in conservation, recycling, desalination, treatment of contaminated aquifers, or other measures to expand</p>

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			supply and storage. For more information regarding water demand management please see Master Response 6. For additional information on storage, please see Master Response 37.
1723	72	<p>The proposed project fails to meet the standards of the Endangered Species Act (ESA), Natural Community Conservation Plan Act (NCCPA), and other environmental laws. This is a fundamental objective of BDCP. See DEIS/DEIR at 2-2 to 2-3. Because the Draft Plan and most alternatives fail to achieve these standards, the range of alternatives must include more alternatives that reduce exports from the Delta in order to provide the improved flows needed to comply with these standards. The State Supreme Court's 2008 decision reviewing the CALFED EIR is instructive:</p> <p>"As the CALFED PEIS/R itself recognizes, Bay-Delta ecosystem restoration to protect endangered species is mandated by both state and federal endangered species laws, and for this reason water exports from the Bay-Delta ultimately must be subordinated to environmental considerations. The CALFED Program is premised on the theory, as yet unproven, that it is possible to restore the Bay-Delta's ecological health while maintaining and perhaps increasing Bay-Delta water exports through the CVP and SWP. If practical experience demonstrates that the theory is unsound, Bay-Delta water exports may need to be capped or reduced. At this relatively early stage of program design, however, we conclude that CALFED properly applied the rule of reason when it decided to consider in the PEIS/R only alternatives that have the potential to both achieve ecosystem restoration goals and meet current and projected water export demands, and that will provide balanced progress in all four of the program areas. Failure to include a reduced exports alternative thus was not an abuse of discretion."</p> <p>(In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings, 43 Cal.4th 1143, 1168 [2008].)</p> <p>Unlike in 2008, practical experience (e.g., numerous court orders, new Biological Opinions and other permits, independent and agency scientific reviews, and the State Water Resources Control Board (SWRCB) 2010 Flow Report) has demonstrated that Bay-Delta water exports need to be reduced in order to achieve the ecosystem recovery requirements of the NCCPA and other state and federal laws.</p> <p>Similarly, the DEIS/DEIR excludes consideration of the fishery agencies' more protective operational proposal for BDCP known as CS5. See Resources Agency, Background on Proposed Project and Operational Rules, March 14, 2013, at 4, available online at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Background_on_B_DCP_Proposed_Project_and_Operational_Rules_3-14-13.sflb.ashx (explaining that CS5 was not incorporated into the Draft Plan or DEIS/DEIR "given the geographic scope of BDCP [limited to the Delta itself]."). CS5 operations provided substantially increased Delta outflow as compared to the Draft Plan and most of the alternatives analyzed in the DEIS/DEIR, resulting in reduced environmental impacts, yet it was excluded from analysis. The DEIS/DEIR should be revised to include alternative operational proposals, such as the operational proposal developed by state and federal fishery agencies in 2013 (known as "CS5"), that provide improved flows (particularly winter/spring Delta outflow) and achieve the requirements of the NCCPA, ESA, and other environmental laws.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The preferred alternative, 4A is not an HCP or NCCP, but will comply with ESA and CESA through Section 7 and 2081, respectively. DWR and Reclamation have worked with FWS, NMFS, and DFW to develop appropriate operational criteria and mitigation measures, which form the components of Alternative 4A. For more information regarding alternatives to the proposed project please see Chapter 3 of the FEIR/EIS and Master Response 4.</p> <p>As described in Appendix 3A, Identification of Water Conveyance Alternatives, EIR/EIS, comments and suggestions received from the State Water Board were influential in defining the range and content of alternatives considered in the EIR/EIS, including the State Water Board's Delta Flow Criteria Report, prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009. Scoping comments from the State Water Board included requests for an alternative providing for reduced diversions and an alternative incorporating changes to Delta outflows (and potentially inflows) that would reflect a more natural hydrograph. The Lead Agencies determined that an additional alternative would be required to be responsive to the State Water Board's comments. Informed by these comments, as well as several letters from the State Water Board to the Natural Resources Agency, DWR met with State Water Board staff to identify a general approach to model an increased spring Delta outflow alternative. This alternative was designed to increase spring Delta outflow by approximately 1.5 million acre-feet, on average, above the NEPA baseline assumptions. This became Alternative 8 as analyzed in the EIR/EIS.</p> <p>Consideration of the specific determination contained in the Delta Flow Criteria Report, which identified 75% of unimpaired net Delta outflow for January through June, would not have been feasible to include as an alternative in the EIR/EIS. A letter from the Executive Director of the State Water Board to the deputy secretary of the Natural Resources Agency on April 19, 2011 recognized that the determination did not consider the competing needs for water or other public trust resource needs, such as the need to manage cold-water resources in tributaries to the Delta. Further, implementation of these flows would also likely affect water users beyond those receiving CVP and SWP deliveries south of the Delta. As described in Section 3A.3.5, alternatives requiring impairment of senior water rights held by entities not participating in the BDCP were eliminated from full consideration in the EIR/EIS, as such rights could not be infringed by CDFW, USFWS, or NMFS through those agencies' actions or through "ESA Section 7 consultation" with Reclamation.</p> <p>For additional supplemental modeling requested by the SWRCB related to increased Delta outflows please see Appendix 5E of the Final EIR/EIS.</p>
1723	73	<p>In our 2008 scoping comments, we requested that the draft environmental documents include alternatives that improve Delta outflow and reduce water exports from the Delta, while also including investments in water conservation, recycling, and other local supplies to</p>	<p>Please see Master Response 4 for a discussion regarding the development of alternatives. The alternatives included in the Draft EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The specific proposals that were</p>

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		<p>improve water supply reliability. In January 2013, our organizations identified a so-called "Portfolio Alternative," which includes a new conveyance in the Delta, a single tunnel, investments in levee stability and new storage, and significant investments in water conservation, recycling, storm water capture, and other local water supplies, and requested that it be analyzed in the DEIS/DEIR. See attachment. [Footnote 19: Information relating to the Portfolio Alternative is included on the attached CD.] More than 30 members of the State legislature, more than 10 members of Congress, several water districts, other local governments, and numerous newspaper editorial boards all requested or recommended that this alternative be analyzed in the DEIS/DEIR. Id. DWR performed some CALSIM modeling of the operational rules proposed in this alternative, including with various conveyance sizes. Id. However, the agencies refused to analyze the Portfolio Alternative, or any other alternative that includes investments in local water supplies, in the DEIS/DEIR. [Footnote 20: While the state included a 3,000 cfs conveyance alternative in the DEIS/DEIR and in Chapter 9 of the draft plan, neither are consistent with the Portfolio Alternative because: (1) the 3,000 cfs alternative in the DEIS/DEIR fails to use the operational rules proposed in the Portfolio Alternative, which increased Delta outflow and reduced exports; (2) the 3,000 cfs alternative in Chapter 9 assumes two tunnels under the Delta, dramatically increasing the cost by nearly \$6B, as compared to a single tunnel alternative, as the State has previously admitted, see http://baydeltaconservationplan.com/news/blog/13-11-12/Revised_Capital_Cost_for_3_000_cfs_Single_Bore_Tunnel.aspx; and (3) the 3,000 cfs alternative in Chapter 9 does not include analysis of additional investments in local and regional water supplies, an essential element of the Portfolio Alternative.]</p>	<p>considered but ultimately rejected by the Lead Agencies are discussed in Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1.</p> <p>Appendix 3A of the FEIR/EIS thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project.</p> <p>Although components such as desalination plants and demand management measures have merit from a statewide water policy standpoint, and are being implemented or considered independently through the state, they are beyond the scope of the proposed project. It is important to note that the proposed project is not intended to serve as a state-wide solution to all of California's water problems, and it is not an attempt to address directly the need for continued investment by the State and other public agencies in conservation, recycling, desalination, treatment of contaminated aquifers, or other measures to expand supply and storage. For more information regarding water demand management please see Master Response 6.</p> <p>For more information regarding alternatives to the proposed project please see Master Response 4.</p>
1723	74	<p>To the extent that the State argues that the purpose and need for the project exclude alternatives with water supply elements outside of the Delta, the purpose and need statement is inconsistent with California law [Footnote 21: The purpose and need statement and objectives are also inconsistent with the requirements of the NCCPA because they wholly misstate that conservation standard of that Act, as discussed in section I(A)(1) of these comments. In addition, the purpose and need statement is unlawfully narrow by attempting to limit the geographic scope of BDCP to the Delta, as we discuss. In addition, to the extent that the reference to water supply goals and "full contract amounts" in the purpose and need statement screen out alternatives that reduce water exports, this would be unlawful.] because it ignores the mandate of State policy to reduce reliance on the Delta and invest in regional and local water supplies, including water conservation, recycling, and similar projects, in order to improve water supply reliability. See Water Code [Section] 85021. Although Chapter 2 of the DEIS/DEIR discusses the Delta Reform Act, it wholly omits discussion of this mandate of the Act. [Footnote 22: The Draft Plan omits any mention of section 85021 in its discussion of the Delta Reform Act, and fails to demonstrate whether and how BDCP is consistent with this section of the Act. See Draft Plan at Chapter 2, Appendix 3I. As currently drafted, the State's proposed project is fundamentally inconsistent with this section of the Delta Reform Act.] It is irrational to exclude all alternatives that include investments in water conservation, water recycling, and other local and regional water supplies to improve water supply reliability. These water supply tools can provide substantial new sources of water for CVP and SWP contractors, and in combination with reduced exports from the Bay-Delta in order to improve flows and environmental outcomes, such an alternative can provide greater water supply reliability and improved environmental outcomes. Development of local water supplies is consistent with the additional project objectives under CEQA and NEPA. DEIS/DEIR at 2-3 ("To develop projects that restore and protect water supply and ecosystem health and reduce 36 other stressors on the ecological functions of the Delta in a manner that creates a stable 37 regulatory framework under the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Appendix 1C of the Final EIR/EIS, Water Demand Management, describes conservation, water use efficiency, and other sources of water supply including desalination. Refer to Master Response 6 for more information on demand management. Although components such as desalination plants and demand management measures have merit from a statewide water policy standpoint, and are being implemented or considered independently through the State, they are beyond the scope of the project.</p> <p>Please see Master Response 3 regarding the purpose and need of the proposed project. For more information regarding alternatives to the proposed project please see Master Response 4. For more information regarding the proposed project's compliance with the Delta Reform Act please see Master Response 31.</p>

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		ESA and NCCPA.").	
1723	75	<p>We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] note that the CALFED [California Bay-Delta Authority] Bay-Delta program (which was approved as a Natural Community Conservation Plan) included significant investments in water conservation and other supplies in all of the alternatives, including the adopted alternative. See CALFED Record of Decision at 12, 19-20, 59-63; CALFED Bay-Delta Program Natural Community Conservation Plan Determinations at 9-10, 22-25, 52. In the context of BDCP, such investments can be analyzed at the program level, with established criteria identifying potential water supply costs and yields, without proscribing how particular water contractors achieve these targets. This is similar to the approach taken for most of the conservation measures in the Draft Plan and DEIS/DEIR, which are analyzed at the program, not project, level. Doing so would not require that the State actually take over implementation of these projects, but instead provides a framework for ensuring that the targets and criteria are achieved. To the extent that the State argues that these sources are not cost-effective, the way to demonstrate that is through analysis in the DEIS/DEIR, not through unsupported conclusory statements.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The proposed project is just one element of the state’s long-range strategy to meet anticipated future water needs of Californians in the face of expanding population and the expected effects of climate change. The proposed project is not a comprehensive, statewide water plan, but is instead aimed at addressing many complex and long-standing issues related to the operations of the SWP and CVP in the Delta, including reliability of exported supplies, and the recovery and conservation of threatened and endangered species that depend on the Delta.</p> <p>Although components such as desalination plants and demand management measures have merit from a statewide water policy standpoint, and are being implemented or considered independently through the state, they are beyond the scope of the proposed project. It is important to note that the proposed project is not intended to serve as a state-wide solution to all of California’s water problems, and it is not an attempt to address directly the need for continued investment by the State and other public agencies in conservation, recycling, desalination, treatment of contaminated aquifers, or other measures to expand supply and storage. Please see Master Response 4 for discussion of the scope of the proposed project and alternatives that were not carried forward for analysis in this document due to the fact that required actions beyond the scope of the proposed project. Also, refer to Master Response 6 and Appendix 1C for further information on demand management measures, including increasing agricultural water use efficiency and conservation.</p> <p>The California Water Action Plan recognizes that all Californians have a stake in the future of our state’s water resources, and that a series of actions are needed to comprehensively address the water issues before us. The five-year agenda spells out a suite of actions in California to improve the reliability and resiliency of water resources and to restore habitat and species — all amid the uncertainty of drought and climate change. For more information regarding future developments of the California Action Water Plan please follow http://resources.ca.gov/docs/Final_Water_Action_Plan_Press_Release_1-27-14.pdf. Future committees for the Proposed Project implementation may provide future opportunities for innovative input as well.</p> <p>The California Water Plan evaluates different combinations of regional and statewide resources management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship. Follow the California Water Plan here: http://www.waterplan.water.ca.gov/.</p> <p>For more information regarding project and program level analysis please see Master Response 2. For more information regarding water supply please see Chapter 5 of the FEIR/EIS.</p>
1723	76	<p>The proposed project and other alternatives analyzed in the DEIS/DEIR will result in significant environmental impacts, including significant impacts to native fisheries and water quality, as well as cumulatively significant impacts. However, alternatives such as the Portfolio Alternative are likely to be feasible alternatives that would result in lower environmental impacts. The failure to meaningfully consider such alternatives precludes the agencies from adopting an alternative that results in significant environmental impacts. See California Public Resources. Code [Section] 21081; California Clean Energy Committee v. City of Woodland, 225 Cal.App.4th 173, 203 (2014).</p>	<p>The alternatives included in the Draft EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The Lead Agencies carefully all potential alternatives that were proposed during the scoping process and during time of preparation of the Draft EIR/EIS.</p> <p>The proposed project was developed to meet the rigorous standards of the federal and state Endangered Species Acts, as such it is intended to be environmentally beneficial, not detrimental. By establishing a point of water diversion in the north Delta and new operating criteria the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility.</p> <p>The specific proposals that were considered but ultimately rejected by the Lead Agencies are discussed in</p>

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			<p>Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1. Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi’s Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project. Please see Master Response 3 for information on the purpose and need for the proposed project.</p> <p>For more information, please see Master Response 4 for discussion of the scope of the proposed project and alternatives (such as desalination or water storage) that were not carried forward for analysis in this document due to the fact that required actions beyond the scope of the proposed project.</p> <p>For more information regarding significant and unavoidable impacts please see Master Response 10.</p>
1723	77	<p>The DEIS/DEIR fails to include a reasonable range of alternatives, and the documents should be revised to include analysis of the Portfolio Alternative and/or one or more other alternatives that achieve the standards of the Natural Community Conservation Plan Act (NCCPA) and other environmental laws as well as increasing investments in regional and local water supplies.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi’s Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project.</p> <p>Regarding development of alternatives for the EIR/EIS, a description of the process the Lead Agencies followed to develop and screen alternatives is provided in Master Response 4.</p>
1723	78	<p>The DEIS/DEIR fails to adequately analyze cumulative impacts.</p> <p>In several respects, the DEIS/DEIR’s analysis of cumulative impacts is significantly flawed, understating the potential environmental impacts of BDCP in combination with other state and federal projects and programs.</p> <p>First, the DEIS/DEIR fails to include several California Bay-Delta Authority (CALFED) reservoir storage projects in its cumulative impacts analysis, despite the fact that notices of preparation, and in some cases, NEPA/CEQA documents, have been released for these projects. These include the Shasta Lake Water Resources Investigation [Footnote 23: See, e.g., Shasta Lake Water Resources Investigation Draft Environmental Impact Statement, June 2013, available online at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=1915. Notice of the DEIS for this project was published in the Federal Register on July 1, 2013. See 78 Fed. Reg. 39315 (July 1, 2013). Prior to that, the draft feasibility report was released in 2012, and the Notice of Intent was published in the Federal Register in 2005. 70 Fed. Reg. 58744 (October 7, 2005). BDCP is included in the cumulative impacts analysis in the DEIS. See, e.g., Shasta Lake Water Resources Investigation Draft Environmental Impact Statement at 3-13, 3-27 to 3-28.], North of Delta Offstream Storage Investigation [Footnote 24: See, e.g., North-of-the-Delta Offstream Storage Investigation, 2013 Progress Report, available online at: http://www.usbr.gov/mp/nodos/docs/NODOS_Progress_Report_12.26.2013.pdf.], and Upper San Joaquin River Basin Storage Investigation [Footnote 25:</p> <p>The Upper San Joaquin River Basin Storage Investigation draft feasibility report was released in January 2014, and is available online at: http://www.usbr.gov/mp/sccao/storage/docs/index.html. The Notice of Intent to prepare an EIS was published in the Federal Register in 2004. See 69 Fed. Reg. 5184 (February 3, 2004). The Upper San Joaquin River Basin Storage Investigation draft feasibility report includes a discussion of BDCP (see esp. pages 6-31 to 6-32), and it states that, "Increasing surface water storage in the upper San Joaquin River Basin could allow for increased system</p>	<p>The cumulative effects analysis in Chapter 5, Water Supply, of the Final EIR/EIS includes the Shasta Lake Water Resources Investigation, North-of-the-Delta Offstream Storage Investigation, and Upper San Joaquin River Basin Storage Investigation (see Table 5-13).</p> <p>It should also be noted that some of the hydrologic modeling project-level results are cumulative in nature in that the input to these models must make allowances for use of water outside boundaries of the project alternatives. This was important to correctly estimate future with and without project hydrologic conditions (Early Late Term and Late Long Term). Although the amount of water supplied by the alternatives would not change, upstream demand would be expected to change during the duration of the project. In the case of the CALSIM modeling, this including increased demand based on the level of buildout estimated under each relevant county’s general plan. As indicated above, this method of incorporating increased water demand into the CALSIM II modeling meets Reclamation’s guidance on how to incorporate the cumulative analysis into the NEPA documentation. As indicated in the methodology sections of some resource chapters, the results of the hydrologic impact analysis was used as the foundation for some of the impact assessment included in these chapters. These chapters included water supply, surface water, water quality, groundwater, aquatic resources, recreation, and energy. In essence, the elements of these impact assessment that relied on the hydrologic impact assessment as the foundation for their unique assessments may, to a certain degree, also be considered “cumulative.”</p> <p>For additional information regarding modeling, please see Master Response 30. For more information regarding the cumulative impact analysis in the EIR/EIS please see Master Response 9.</p>

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		flexibility and further use of new Delta conveyance facilities, providing for even greater increases in water supply reliability." Draft feasibility report at 1-37; see id. at 6-6 (stating that water supply benefits are expected to increase in combination with BDCP). That report also concludes that modeling studies will be updated to account for BDCP. Id. at 3-8.]. The DEIS/DEIR mentions the Shasta Lake Water Resources Investigation and Upper San Joaquin River Basin Storage Investigation, but does not include either of these potential new reservoirs in the cumulative impacts analysis. DEIS/DEIR at Appendix 3D-90, 3D-92.	
1723	79	The DEIS/DEIR claims that the North of Delta Offstream Storage Investigation is included in the cumulative impacts analysis, DEIS/DEIR at Appendix 3D-91, but it appears that all of the cumulative impact analysis is qualitative and fails to include the potential reservoir projects in CALSIM modeling, despite the CALSIM modeling available for these projects. See, e.g., DEIS/DEIR at 11-3006 ("This analysis [Cumulative Effects on Fish and Aquatic Resources] is qualitative in nature.").	<p>The comment is correct that potential reservoir projects are only considered in the BDCP EIR/EIS as cumulative impact projects (please see Master Response 37). The cumulative impacts analysis is a qualitative analyses for projects that are still undergoing evaluation or review, including potential reservoir projects (e.g., North-of-Delta-Offstream Storage, or Sites Reservoir).</p> <p>For more information on cumulative impacts in the EIR/EIS please see Master Response 9 and response to comment 1723-78.</p>
1723	80	In combination with BDCP, these storage projects have the potential to significantly reduce Delta outflow and increase Delta exports, particularly as compared to modeled conditions in the DEIS/DEIR, which would be likely to cause cumulatively significant environmental impacts. The failure to analyze these and other storage projects (such as expansion of San Luis Reservoir or further expansion of Los Vaqueros Reservoir, both of which are being analyzed by the federal government) results in the DEIS/DEIR underestimating the cumulative environmental impacts. These projects also will cause cumulative impacts on water supply. See DEIS/DEIR at 5-153 to 5-154 (excluding these reservoir projects from the cumulative impacts analysis). [Footnote 26: The DEIS/DEIR also fail to adequately explain and justify the increase of 443 thousand acre-feet (TAF) in upstream diversions, which reduce export water supply. See DEIS/DEIR at 5-67.]	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-78, which points out the inclusion of water storage projects in the cumulative effects analysis. Table 5-13 in Chapter 5, Water Supply, of the EIR/EIS includes the expansion of the San Luis Reservoir and Los Vaqueros Reservoir.</p> <p>Please see Master Responses 9 and 37 regarding the cumulative impact analysis and other storage projects.</p> <p>Please see FEIR/EIS Appendix 3D for updates defining existing conditions, no action alternative, no project alternative, and cumulative impact analysis for the proposed project.</p> <p>Impacts on Delta outflows (fresh water flowing to the Bay) are not significant. Model simulation results for the preferred alternative (4A) indicate that long-term average and wet year peak outflows would increase in winter months with a corresponding decrease in spring months because of the shift in system inflows caused by climate change and increased Delta exports as compared to Existing Conditions. In other year types, Alternative 4A would result in higher or similar outflow because of the spring outflow requirements. In summer and fall months, Alternative 4A would result in similar or higher outflow because of changes in export patterns and OMR flow requirements and export reductions in fall months, and also because of the Fall X2 requirements in wet and above normal years. The incremental changes in Delta outflow between Alternative 4A and Existing Conditions would be a function of both the facility and operations assumptions (including north Delta intakes capacity of 9,000 cfs, less negative OMR flow requirements, enhanced spring outflow and/or Fall X2 requirements) and the reduction in water supply availability due to increased north of Delta urban demands, sea level rise and climate change. Results for the range of changes in Delta Outflow under Alternative 4A are presented in more detail in Appendix 5A, BDCP EIR/S Modeling Technical Appendix, of the Draft EIR/EIS. For a more detailed response regarding impacts beneficial uses of water, please see Master Response 34.</p>
1723	81	With additional storage south of the Delta, operations in the Delta could result in greater water exports, which could increase entrainment, increase negative Old & Middle River (OMR) flows, or reduce outflow, particularly as compared to modeled conditions. [Footnote 27: As an example, the CALSIM modeling relied on in the DEIS/DEIR assumes that OMR will be less negative than required by the proposed operational rules. However, providing additional storage could result in increased inflows to the Delta and increased export pumping that could increase negative OMR as compared to the CALSIM modeling, increasing environmental impacts as compared to that in the DEIS/DEIR. Such differences	The Proposed Project would enable DWR to construct and operate new conveyance facilities that improve conditions for endangered and threatened aquatic species in the Delta while at the same time improving water supply reliability, consistent with California law (see, e.g., Cal. Wat. Code, § 85001[c]). Implementing the conveyance facilities would help resolve many of the concerns with the current south Delta conveyance system, and would help reduce threats to endangered and threatened species in the Delta, including entrainment south Delta export facilities. For instance, implementing a dual conveyance system would align water operations, and their location, to better reflect natural seasonal flow patterns by creating new water diversions in the north Delta equipped with State-of-the-art fish screens, thus reducing reliance on south

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		<p>between modeled conditions and actual operations have occurred frequently in recent years, including under CALFED and under prior Biological Opinions.] Appendix 1B of the DEIS/DEIR admits that preliminary BDCP modeling shows that increased South of Delta storage could increase water exports under BDCP by approximately 150 Thousand acre-feet per year, with the majority of pumping increases in wet years. DEIS/DEIR at 1B-12. Inexplicably, this preliminary modeling and analysis is not included in the cumulative impacts analysis, only this conclusory statement.</p>	<p>Delta exports during times of the year when listed aquatic species are present and most vulnerable. For more information on mitigation measures to minimize contraction and operational-related impacts to fish species, including Delta and longfin smelt, please see Chapter 11, EIR/EIS.</p> <p>The proposed project does not increase the amount of water to which DWR holds water rights or for use as allowed under its contracts. Water deliveries from the federal and state water projects under a fully-implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline.</p> <p>While water storage is a critically important tool for managing California's water resources, it is not a topic that must be addressed in the EIR/EIS for the proposed project. This is because the proposed project does not, and need not, propose storage as a project component. Although the physical facilities contemplated by the proposed project, once up and running, would be part of an overall statewide water system of which new storage could someday also be a part, the proposed project is a stand-alone project for purposes of CEQA and NEPA, just as future storage projects would be. Appendix 1B, Water Storage, of the EIR/EIS, describes the potential for additional water storage.</p> <p>Please see Master Response 37 regarding water storage. For more information regarding cumulative impacts please see Master Response 9 and response to comment 1723-78.</p>
1723	82	<p>Appendix 1B claims that all of these potential surface storage projects are neither "a probable future project" nor a "reasonably foreseeable future action." DEIS/DEIR at 1B-1. This conclusion is wholly inconsistent with the existing draft feasibility studies, notices of preparation, and draft NEPA/CEQA documents referenced herein. Further demonstrating that additional storage is a reasonably foreseeable future project under NEPA, in 2013 the State wrote that, "And [BDCP] is about establishing the improved conditions to set the stage for additional future storage improvements north and south of the Delta." See www.baydeltaconservationplan.com/news/blog/13-05-16/Making_Storage_Work.aspx. Likewise, the National Marine Fisheries Service (NMFS) has concluded that, "There is a high likelihood that south-of-delta storage capabilities will be increased over the 50-year term of this permit. There is also the potential for such an increase in storage capacity to result in water operation parameters (pumping rates/timing, Old and Middle River (OMR) flows, Import/Export ratios, etc.) that differ from those modeled in the current analysis." NMFS 2013 Progress Assessment at 18. And the Delta Stewardship Council, in their June 24, 2014 comment letter on BDCP, stated that new storage should be included in the cumulative impacts analysis. In light of the availability of CALSIM modeling for many of these proposed reservoir projects, the likelihood that new storage projects (particularly South of the Delta) will occur, the existing NEPA/CEQA documents and draft feasibility studies for CALFED storage projects, and the State's statement that BDCP "set the stage" for new surface storage, the failure to include these projects in the modeling and analysis of cumulative impacts violates CEQA and NEPA.</p>	<p>Please see responses to comments 1723-78 regarding the inclusion of water storage projects in the cumulative effects analysis and 1723-80 regarding Delta outflows.</p>
1723	83	<p>The DEIS/DEIR fails to include Phase I and Phase II of the State Water Resources Control Board's (SWRCB) update of the Bay Delta Water Quality Control Plan. See Attachment 3D-A (not listing either Phase I or Phase II in the description of projects and programs included in the cumulative impacts). The SWRCB has publicly noticed both phases of these proceedings, [Footnote 28: The Notice of Preparation for Phase I was issued on February 13, 2009, and is available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_</p>	<p>Attachment 3D-A in Appendix 3D of the Final EIR/EIS includes the Bay-Delta Water Quality Control Plan Update, Phases 1 through 4.</p> <p>Please see response to comment 1723-78 for more information on cumulative impacts and modeling.</p>

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		<p>plan/environmental_review/docs/nop2009feb13.pdf. The supplemental Notice of Preparation related to Phase II was issued on January 24, 2012, and is available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/environmental_review/docs/notice_baydeltaplancompview.pdf.] and in late 2012 the SWRCB issued a draft Substitute Environmental Document for Phase I (lower San Joaquin flows). [Footnote 29: The 2012 draft SED for Phase I is available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/. The SWRCB is currently revising the SED in response to comments, and plans to release a revised draft SED later this year.] The potential increase in flows from the San Joaquin River in Phase I of these proceedings would significantly affect operations of the CVP and SWP under BDCP, and could potentially result in increased export pumping, entrainment, outflow, residence time, and other changes in water quality in the Delta. At a minimum, the DEIS/DEIR should include modeling of SWRCB alternatives in its analysis of cumulative impacts. These proceedings began in 2009.</p>	
1723	84	<p>The DEIS/DEIR fails to include planned investments in local water supply development and water conservation, particularly in Southern California. See Attachment 3D-A. New water conservation, water recycling, stormwater capture, and similar projects to increase regional water supplies can reduce the need for water exports from the Delta, and help increase water supply reliability. For instance, in late 2012 the San Diego County Water Authority identified more than 1.2 million acre feet in planned conservation and other water supply projects in Southern California (in addition to "650,000 AF of planned and state-mandated conservation"), the vast majority of which were not included in the 2010 Urban Water Management Plan prepared by the Metropolitan Water District of Southern California. See, e.g., http://www.sdcwa.org/sites/default/files/files/board/2013_agendas/2013_01_13_FormalBoardPacket.pdf (see pages 161-285). While some of these projects were analyzed in Chapter 9 of the BDCP [Footnote 30: According to text in Chapter 9A, BDCP relied on MWD's IRPSIM model in calculating local water supplies and conservation available to retail agencies. See Draft Plan at 9.A-6 and FN 1. As such, it would have failed to include many of these planned projects in Southern California, thus substantially overstating demand for water from the Delta and potential water shortages. For instance, Chapter 9A estimates that recycled water increases by only 100TAF/year by 2035, see Draft Plan at 9.A-7, whereas SDCWA's review of existing UWMPs has identified more than 248,000 acre-feet of new water supply from water recycling by 2035. See http://www.sdcwa.org/sites/default/files/files/board/2013_agendas/2013_01_13_FormalBoardPacket.pdf (page 283). In addition, although Chapter 9A assumes shortages in water supplies in dry years in urban areas, MWD's 2010 UWMP identified surpluses in 2035, under both single critically dry year (1977) and multiple dry year (1990-1992) hydrology. See id. (reproducing tables from MWD's 2010 UWMP).], they were not analyzed in the DEIS/DEIR.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Although components such as desalination plants and demand management measures have merit from a statewide water policy standpoint, and are being implemented or considered independently through the state, they are beyond the scope of the proposed project. The lead agencies cannot impose obligations on third parties that are not applicants under proposed project. It is important to note that the proposed project is not intended to serve as a state-wide solution to all of California's water problems, and it is not an attempt to address directly the need for continued investment by the State and other public agencies in conservation, recycling, desalination, treatment of contaminated aquifers, or other measures to expand supply and storage.</p> <p>The alternatives included in the Draft EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The specific proposals that were considered but ultimately rejected by the Lead Agencies are discussed in Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1. Appendix 3A thoroughly explains why various proposals were not analyzed in the EIR/EIS, including the NRDC Portfolio-Based Proposal, Congressman Garamendi's Water Plan, and other similar concepts that would require actions that are beyond the scope of the proposed project.</p> <p>Also, refer to Master Response 6 and Appendix 1C for further information on demand management measures, including increasing agricultural water use efficiency and water conservation.</p>
1723	85	<p>The analysis in DEIR under CEQA fails to adequately account for the impacts of climate change, in contrast to the NEPA analysis. See DEIS/DEIR at 4-6. At a minimum, the effects of climate change in combination with BDCP and other probable future projects must be analyzed as cumulative impacts under CEQA.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Although the analyses prepared under CEQA and NEPA often overlap, each statute has separate and distinct requirements that sometimes mandate different approaches or compel different results. Therefore, within the resource chapters, each impact discussion begins with a general explanation and assessment of potential effects relating to implementation of the alternative at issue. Within these discussions for most impacts, a "NEPA Effects" header identifies the portion of the analysis that contains a general conclusion specific to NEPA (i.e., whether the impact is "adverse" or "not adverse"). This discussion is followed by a "CEQA Conclusion" section that generally reflects the preceding analysis but then draws a conclusion specific to</p>

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			<p>CEQA. The NEPA and CEQA conclusions are not always the same for each impact due to the different requirements of each statute. Moreover, as permitted under NEPA, the discussion under "NEPA Effects" sometimes does not state any conclusion regarding the severity of the impact.</p> <p>Please refer to Master Response 19 which addresses how climate change has been analyzed in the EIR/EIS. Additionally, Master Response 31, includes has a listing of the numerous chapters and appendices in the EIR/EIS that address and demonstrate the importance of climate change in the evaluation of the proposed project's alternatives as well as how environmental baselines were developed under CEQA and NEPA.</p>
1723	86	<p>The Geographic Scope of the DEIS/DEIR is unlawful.</p> <p>CEQA requires that an EIR's analysis of significant environmental effects describe all significant direct and indirect changes in the physical environment caused by the proposed project over time. See, e.g., 14 Cal. Code Regs. [Section] 15126. An artificially truncated project description does not excuse the failure to analyze the full scope of impacts, but instead reflects a flawed project description and a flawed impact analysis. See, e.g., Santiago County Water Dist. v. County of Orange, 118 Cal. App. 3d 818 (1981); San Joaquin Raptor Rescue Ctr. v. County of Merced, 149 Cal. App. 4th 645 (2007).</p> <p>Here, the draft EIS/EIR excludes analysis of potentially significant adverse impacts of the proposed project on the environment downstream of Chipps Island and in San Francisco Bay. The EIS/EIR must be revised to address these impacts.</p>	<p>Since the time of the Draft EIR/EIS, the impacts downstream of the Delta for water quality and fish and aquatic resources was included in the RDEIR/SDEIS and now appears in Chapter 8, Water Quality and Chapter 11, Fish and Aquatic Resources in this Final EIR/EIS.</p>
1723	87	<p>The BDCP Plan Area's downstream boundary is at Chipps Island, excluding Suisun Bay, Suisun Marsh, and San Francisco Bay. But that does not mean that the Plan's impacts cease at that boundary. Indeed, independent analyses have identified significant impacts downstream of the Plan's boundaries that are not assessed in the draft EIS/EIR. Cf. National Research Council, A Review of the use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan, 2011 ("NRC Review 2011"), at 2-3, 17.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-86 regarding effects addressed in San Francisco Bay.</p>
1723	88	<p>There has been no analysis of BDCP's flow, sediment, food, temperature, and dissolved oxygen (DO) effects on water bodies downstream of Suisun Marsh. However, the Plan reveals that "the greatest difference in the mean DO value for any day of the year was 0.95 mg/L in Suisun Marsh during March." Draft Plan at 5.3-23. With no analysis of impacts farther downstream, potentially significant impacts to San Francisco Bay remain undisclosed. The March 2014 Delta Science Program Independent Review Panel agreed: "The current Effects Analysis does not consider the influence of shifting timing of withdrawals on San Francisco Bay circulation patterns and ecology. This is a significant omission with ecologically important implications." Delta Science Program Independent Review Panel Report, BDCP Effects Analysis, Phase 3, March 2014, available online at: http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf ("DSP Independent Science Review Panel Report 2014") at 14 (incorporated by reference).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-86 regarding effects addressed in San Francisco Bay.</p>
1723	89	<p>The State Water Resources Control Board has also expressed concern that the projected increase in Suisun Marsh salinity will degrade conditions for fish and wildlife. SWRCB, Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan, July 5, 2013 ("SWRCB 7/5/13 BDCP Comments") at 13. The DEIS/DEIR summarily states that BDCP will contribute to "measurable long term degradation," DEIS/DEIR at 8-426, and "would contribute substantially to the adverse water quality effects," id. at 8-428. But the effect of these</p>	<p>Please see response to comment 1723-86 regarding effects addressed in San Francisco Bay.</p>

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		adverse impacts on the downstream ecosystem, including San Francisco Bay, are not analyzed or disclosed in the draft EIS/EIR. In addition to potentially significant salinity impacts downstream of the BDCP Plan Area, the draft EIS/EIR fails to assess impacts on turbidity and sediment supply to the Bay.	
1723	90	<p>The March 2014 Delta Science Program Independent Review Panel Report states:</p> <p>"...this isn't a conservation plan, but rather a conservation menu that generally fails to describe how major uncertainties will be resolved. For instance, while the Effects Analysis recognizes that suspended sediment has been declining in the Sacramento River and that the new diversions would remove an additional 8-9%, all analyses used a high and constant amount with no mention of downstream sediment effects on either Suisun or San Francisco Bay."</p> <p>(DSP Independent Science Review Panel Report 2014 at 13.)</p> <p>The Delta Stewardship Council and other reviewers have also noted this flaw in the geographic scope of the effects analysis and DEIS/DEIR. See Delta Stewardship Council, Comments on the Bay Delta Conservation Plan Draft Environmental Impact Statement/Environmental Impact Report, June 24, 2014, at 12, available online at: http://deltacouncil.ca.gov/sites/default/files/documents/files/BDCP%20Comments%20Cover%20Letter%20and%20Final%20BDCP%20EIR-S%20Comments.pdf ("DSC BDCP Comments June 2014").</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-86 regarding effects addressed in San Francisco Bay.</p>
1723	91	<p>The Draft Plan also admits that there may not be sufficient sediment for marsh restoration, or even maintenance of existing tidal marsh, but it fails to analyze such impacts on tidal marsh habitats in Suisun Marsh and other areas downstream of the Plan Area. See, e.g., Draft Plan at 5.3-24 to -25 ("The initial effect of tidal restoration is to decrease sediment supply downstream of the Plan Area..."). It states that BDCP's in-Delta Restoration Opportunity Areas "could also lead to greater water clarity in downstream areas such as Suisun Bay," and that there is "potential for lower water clarity in the LLT under the BDCP in portions of the Suisun Bay and West Delta subregions." Id. These short-term reductions and uncertain long-term sediment conditions, when combined with long-term sea level inundation of existing and restored marsh areas, could result in significant losses of marsh habitat in and downstream of the Delta. Yet the BDCP fails to analyze these potential impacts, and it proposes no mitigation measures to address such impacts. DEIS/DEIR figure 8-49 shows low turbidity in 2006 downstream of the major dams on the Sacramento River and Feather River. Missing from the DEIS/DEIR are turbidity values upstream of these dams or on tributaries that have a less-impaired sediment flow to the valley floor. Clearer water in San Francisco Bay as a result of BDCP could allow sunlight to penetrate the water column further. This could change the Bay's response to nutrient input, causing increased algal blooms and degraded water quality. See Delta Independent Science Board, Review of the draft EIS/EIR for the Bay Delta Conservation Plan May 15, 2014 ("Delta ISB 2014"), at B-12, available online at: http://deltacouncil.ca.gov/sites/default/files/documents/files/Attachment-1-Final-BDCP-comments.pdf. Yet as the Delta ISB and other reviewers have noted, the Draft Plan and DEIS/DEIR fail to analyze and disclose the nature and extent of these likely environmental impacts.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p> <p>Alternatives that were presented in the Draft EIR/EIS evaluated restoration conservation measures at a program level of detail that match the level of detail in the Draft BDCP. Because the locations and project level details related to tidal habitat restoration locations and specific characteristics are unknown at this time it would be speculative to attempt to address these types of downstream effects in Suisun Bay. Because of the program nature of these conservation measures, additional project specific review of individual projects implemented under these conservation measures may be required to disclose project-level environmental effects.</p> <p>All turbidity figures presented in the Environmental Setting/Affected Environment of Chapter 8 (Figures 8-47 through 8-49) are to characterize turbidity of waters bodies that will be affected by the project alternatives. Inflows to the major reservoirs will not be affected by the alternatives.</p> <p>A new Impact WQ-34 has been added to water quality assessment in Chapter 8 for all alternatives to discuss impacts on San Francisco Bay, which includes turbidity.</p>
1723	92	The Draft Plan fails to adequately define the elements of governance and adaptive management associated with Plan implementation and fails to meet applicable legal	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.

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		<p>standards.</p> <p>The governance structure and the Adaptive Management Plan are critical components of the BDCP. Governance sets forth who will implement the Draft Plan and how, providing assurances to plan participants as well as the public that the Draft Plan will be implemented fairly, transparently, and consistent with existing statutory and regulatory requirements. Adaptive management is widely recognized as a necessary element of an ecologically sustainable HCP/NCCP. Fish & Game Code [Section] 2820(a)(2), (8), (b)(5), (f)(1)(G); HCP Handbook at 3-24; see 50 C.F.R. [Section] 17.22(b)(2)(C), (b)(5). In the Services' Five Point Policy Guidance, the Service states that "[a]daptive management is an integrated method for addressing uncertainty in natural resources management." 65 Fed. Reg. at 35252.</p>	<p>Please see Master Response 5 for a discussion of the governance structure proposed in the 2013 public draft BDCP. Please also see Master Response 33 for a discussion of the adequacy of the adaptive management program.</p>
1723	93	<p>The Adaptive Management Plan lacks the necessary details to support the required findings for permit issuance.</p> <p>Given the broad complexities of the BDCP, the Adaptive Management Program is an essential and critical part of this plan. Indeed, the Services acknowledged this in a white paper on the application of the Five Point Policy to the BDCP, in which they stated that,</p> <p>"[t]here is substantial uncertainty regarding the effects on listed species of a new water conveyance system and of water withdrawal, combined with effects of other human activities and natural phenomena that are reasonably certain to occur, over a time period as long as 50 years. This uncertainty is compounded by both the complexity of the Delta ecosystem and the predicted future increases in temperature and climate variability."</p> <p>(BDCP 5-Point Policy Memo at 1.)</p> <p>In order for the Adaptive Management Program to work and for the Services to be able to make their required findings for permit issuance, the Draft Plan must include "an adaptive management plan that tests alternative strategies for meeting those biological goals and objectives, and a framework for adjusting future conservation actions, if necessary, based on what is learned." Id. at 2; see also HCP Handbook; 65 Fed. Reg. at 35252.</p> <p>Despite the fact that there are entire sections of the BDCP devoted to the discussion of Adaptive Management, the Plan lacks a great deal of details on how the Adaptive Management Plan will be designed. In its review of the Draft BDCP, the Delta Independent Science Board commented that the "adaptive management process is not fully developed" and is "left to a future Adaptive Management Team." Delta ISB [Independent Science Board] 2014 at 3, 8-9, 11; see id., Appendix A at A-13 to A-23. This lack of detail led the Delta ISB to conclude that they "have substantial misgivings about how well the proposed adaptive management process, as proposed, will actually function as a key component of BDCP." Id. at 9 (emphasis added).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program. Note that Alternative 4A alters the structure of the adaptive management and monitoring program, relative to the BDCP proposal.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>
1723	94	<p>There is no basis to conclude that the Adaptive Management Plan will result in the achievement of the Plan's biological goals and objectives.</p> <p>As discussed supra in section I(C), the Plan and Draft Implementing Agreement makes clear that the BDCP biological goals and objectives are not enforceable and not a part of the permit requirements. This lack of enforcement undermines the credibility of the BDCP's Adaptive Management Plan. According to the Federal Agency White Paper, the BDCP is intended to be a "results-based" HCP, which means that the permittees will be given flexibility in managing the plan "as long as [the permittees] achieve the intended result (i.e.,</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p>

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		<p>the biological goals and objectives)." BDCP 5-Point Policy Memo at 1; see also 65 Fed. Reg. at 35351. However, if the BDCP's biological goals and objectives are not enforceable, there is no guarantee that the Draft Plan, through the implementation of the Adaptive Management Program, will result in the achievement of these goals and objectives. In order to cure this problem, the BDCP biological goals and objectives should be made a part of the permit requirements, guaranteeing that they are reasonably certain to occur through the Adaptive Management Program.</p>	
1723	95	<p>The Plan fails to adequately describe how operations or other actions will be modified based on new information as part of the Adaptive Management Plan.</p> <p>The Adaptive Management Plan is lacking a large number of details, including how the Draft Plan will modify operations in light of new information. For example, the Delta Independent Science Board commented that the Draft BDCP lacked "measures needed to evaluate actions and make adjustments," including a failure to identify "'trigger points' at which adaptive management procedures would be initiated." Delta ISB 2014 at 8. Indeed, the Delta ISB commented in its letter that it agreed with the Delta Science Program's Independent Panel's review of Chapter 5 (Effects Analysis), which, among other things, criticized the BDCP for "[c]haracteriz[ing] adaptive management as the default solution to unresolved issues and uncertainties, without clear description of how adaptive management will actually be implemented or tied to monitoring." Id. at 10.</p> <p>At the heart of the Adaptive Management Plan is the need to make changes to the Draft Plan's implementation, including operations, if new information indicates that changes are necessary to continue to achieve the Draft Plan's biological goals and objectives. Currently, the Decision Tree is at odds with effective adaptive management as it creates brackets that inappropriately limit the potential range of operations to preclude necessary improvements in outflows, fails to identify how the agencies would decide which of the Decision Tree operational alternative should be used, and fails to explain default or starting operations under the Decision Tree. See Draft Plan at 3.4-24 to -26. Many scientific reviewers have criticized the adaptive management framework for these and other reasons. Delta ISB 2014 at 3, 8-9, 11; see id., Appendix A at A-13 to A-23; Mount and Saracino et al. 2013 at 3, 83-84, 86-87, 99-105; DSP Independent</p> <p>Science Review Panel Report 2014 at 8-9, 15-16, 18, 20, 41-44. This bracketing creates limits in how adaptive management will be used to achieve biological goals and objectives. If the BDCP is committed to using best available science and adaptive management, the Draft Plan must not set artificial boundaries that limit operations where those operational limits are unlikely to result in the Draft Plan achieving its biological objectives, as demonstrated infra.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program and Master Response 44 regarding the decision tree.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>
1723	96	<p>The Adaptive Management Plan lacks scientific independence.</p> <p>The Adaptive Management Team (AMT) is chaired by the BDCP Science Manager and has primary responsibility for the administration of the Adaptive Management Program. The AMT consists of representatives from DWR, Reclamation, federal water contractors, state water contractors, Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and National Marine Fisheries Service, all of which are voting members. The Interagency Ecological Program Lead Scientist, the Delta Program lead scientist, and the Director of the National Oceanic and Atmospheric Administration Southwest Fisheries Science Center will serve as non-voting members of the AMT. In addition, the Science Manager is hired by the Program Manager, who is directed by the Authorized Entity Group (AEG), which is</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>comprised of federal and state water contractors, DWR and Reclamation.</p> <p>The current make-up and structure of the AMT blurs the distinction between regulated entities, scientists and regulators. Moreover, the Adaptive Management Program could be perceived as essentially run by the regulated entities since the Science Manager is hired by the Program Manager, who is overseen by the AEG.</p> <p>Further, there is nothing in the Draft Plan demonstrating any kind of independent oversight of the BDCP Adaptive Management Program. There is some mention of coordinating with the Delta Science Program, but as noted by the Delta Science Program's Independent Panel, the Draft Plan lacks any clarity about the coordination with the Delta Science Program. Delta ISB 2014 at A-20. It is absolutely critical that the BDCP Science Program and Adaptive Management Program contain a clear structure for independent science oversight.</p> <p>Finally, it appears that the AMT may be allowed to operate almost entirely outside of public view. There is no requirement for AMT meetings to be open to the public in any meaningful way. Instead, the Draft Implementing Agreement states that the AMT shall open its meetings to the public "[o]n a periodic basis." Draft IA at 30. In order to foster transparency and credibility with the public, the AMT and its discussions must be more open to the public.</p>	
1723	97	<p>The Draft Plan's governance structures and rules, including those governing the Adaptive Management Program, violate state and federal law, and are likely to result in paralysis.</p> <p>The Draft Plan and Draft Implementing Agreement detail a complex set of rules and structures for the implementation of the Plan, including the Adaptive Management Program. The Authorized Entity Group, the Permit Oversight Group, the Program Manager, the Science Manager, the Adaptive Management Team, and the Real Time Operations Team are at the core of the governance structure. The Plan details conflict resolution processes for each of these groups or teams as it pertains to specific types of decisions.</p> <p>The Authorized Entity Group (AEG) will include four members: A representative from the state water contractors, a representative from the federal water contractors, the Director of DWR, and the Regional Director for Reclamation. The state and federal water contractors are likely to be members of the AEG as the Draft Plan and Draft IA anticipate making them permittees. There are no fish and wildlife agencies on the AEG. The AEG has numerous duties and responsibilities, including hiring the Program Manager, implementation and administration of the program, implementation and oversight of the implementation of the conservation measures (except for water operations), compliance monitoring and reporting, the production and approval of the Annual Work Plan, the production of the Annual Program Report, Annual Water Operations Report, and Five Year Comprehensive Review. The AEG also is involved in the selection of the Science Manager and heavily engaged in the decision-making of all aspects of the Adaptive Management Program. See Draft Plan Chapters 6 and 7.</p> <p>The Permit Oversight Group (POG) will be comprised of the Regional Director of the U.S. Fish and Wildlife Service, the Regional Administrator of National Marine Fisheries Service, and the Director of Department of Fish and Wildlife. The POG is involved in a variety of implementation and oversight duties involving the Program Manager, AEG and the Adaptive Management Plan. Of particular importance, the POG has input into the Annual Delta Water Operations Plan, but does not have any ability to require changes to that plan. Id.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the California Natural Community Conservation Planning Act (NCCPA), and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p>

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		<p>The Program Manager will be hired by the AEG and essentially manages the implementation of the BDCP Program except for water operations. The Science Manager is hired by the Program Manager and chairs the Adaptive Management Team.</p> <p>Finally, the Real Time Operations Team is in charge of real time operation of Conservation Measure 1. The Real Time Operations Team is comprised of one representative each from USFWS, NMFS, CDFW, Reclamation and DWR. The team will also include a representative each from the state and federal water contractors, but those two representatives will be non-voting members of the team.</p>	
1723	98	<p>As discussed below, the lines of authority and final decision-making are complicated and, for some decisions and groups, contradictory to current law or standards of transparent and effective decision-making.</p> <p>The governance structure and Adaptive Management Program violate the Delta Reform Act requirement that the fish agencies ensure the achievement of the biological performance measures with respect to water system operations.</p> <p>The Delta Reform Act requires that the fish agencies must be in a position to ensure that the biological performance measures in the BDCP's water operations are achieved. [Footnote 31: The Delta Reform Act provides that, "[t]he BDCP shall include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations." Cal. Water Code [Section] 85321.] However, under the Plan the fish agencies (as the Permit Oversight Group) do not have approval rights for some of the key plans and decisions that would affect biological performance of the BDCP as it pertains to water operations. First, in the case of the Real Time Operations Team, it is not clear that the fish agencies have final decision-making authority if there is a dispute. According to the Plan, the Regional Director of the relevant fish agency may only have final decision-making authority if "the Director of the project agency concurs that the change is within their authority." Draft Plan at 3.4-27. If the Director of the project agency disputes that the fish agencies have authority to make the change, there does not seem to be any recourse other than the status quo. This approach does not meet the Delta Reform Act standard.</p> <p>Second, the fish agencies are not in a position to ensure that biological performance measures in the BDCP's water operation will be achieved with respect to the Annual Water Operations Plan. Practically speaking, DWR and Reclamation have final authority and approval over those plans. While it appears that the POG may find that the Annual Water Operations Plan is unacceptable, it is in DWR and the Bureau's discretion to make changes to that plan and even after the dispute resolution process, DWR and the Bureau have final decision-making authority. Draft IA at 72. This approach does not meet the Delta Reform Act standard.</p> <p>Third, the fish agencies do not have approval rights over the Annual Work Plans or Budgets other than providing written concurrence that the "draft adequately sets forth and makes adequate provision for the implementation of the applicable joint decisions of the Authorized Entity Group and Permit Oversight Group or decisions of the agency within the Permit Oversight Group with authority over the matter." Draft Plan at 7-12; Draft IA at 71. This language is a departure from the finding that the POG is supposed to make regarding the Annual Water Operations Plan. For that plan, the POG must ensure that it is consistent with the BDCP, Implementing Agreement, and regulatory requirements. Draft Plan at 6-23; Draft IA at 71. At a minimum, the POG should be required to make a similar finding for the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p>

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		<p>Annual Work Plan. The lack of the fish agencies' ability to affect changes to the Annual Water Operation Plan is troubling since that plan is likely to include funding and staffing decisions and action that could affect biological performance measures with respect to water system operations.</p> <p>Finally, the Plan currently shifts responsibility for a key part of adaptive management to the Adaptive Management Team with no decision-making authority by the fish agencies under the guise of "routine or administrative matters." Draft IA at 30-32. The IA defines "routine and administrative matters" as "reassessment of and modification to problem statement sand conceptual models." Id. at 30-31. However, a change to a problem statement or conceptual model is hardly a "routine or administrative" matter. At the beginning of the Plan's Adaptive Management chapter, conceptual models are listed as a key part of adaptive management. Draft Plan at 3.6-2, 3.6-15. Conceptual models link the biological objectives to proposed actions. By allowing the AMT to make changes to conceptual models and problem statements, the Plan removes the fish agencies from effectively ensuring that biological performance measures will be achieved. This is not only in violation of the Delta Reform Act, but it undermines the credibility of the Adaptive Management Program in its entirety.</p>	
1723	99	<p>The governance structure and Adaptive Management Program appear to improperly delegate operation of the CVP.</p> <p>Numerous state and federal laws, such as the Central Valley Project Improvement Act (CVPIA), require that the SWP and CVP be operated by the state and federal governments, respectively. See Permittee Memo. Federal law prohibits delegating the Secretary's policymaking role and authority. Id. (citing National Park and Conservation Association v. Stanton, 54 F. Supp. 2d 7 (D.D.C. 1999)).</p> <p>While the Plan appears to attempt to disentangle DWR and Reclamation from the state and federal water contractors for purposes of CVP and SWP operations, as detailed above, the very structure of the Authorized Entity Group (in which two of the four voting members are water contractors), with the presence of federal and state water contractors in the Real Time Operation Team as well as on the Adaptive Management Team creates a situation in which the water contractors will have special and undue influence in CVP and SWP water operations decision-making on a day-to-day basis and for the 50 year length of the permits.</p> <p>In addition, there is some confusing language in Chapter 7 in which the Implementation Office structure is described as "contemplate[ing] that DWR and Reclamation will maintain their historical roles as operators of the SWP and CVP, but provides flexibility for changing those roles if so directed by Congress, the California Legislature, or through administrative process." Draft Plan at 7-22. While it is clear that Congress and the California Legislature may change the laws regarding who can operation the CVP and SWP, respectively, it is unclear what "administrative process" would allow for such a delegation of authority.</p> <p>Finally, as discussed supra in section I(C), the state and federal contractors are legally unqualified to serve as permittees, and such status would inevitably influence the operation of the CVP and SWP. Permittees have an entirely different legal relationship to the BDCP than non-permittees.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p>
1723	100	<p>The Adaptive Management Team's (AMT's) requirement of consensus is unworkable and a barrier to effective adaptive management.</p> <p>The AMT is required to operate by consensus, which means that if any one member of the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>group objects to a decision, there is no consensus of the team. Lack of consensus triggers a drawn-out process detailed in Chapter 7.1.6. This AMT structure is unwieldy and may result in delay. Delta Independent Science Board 2014 at 8 ("the organization structure may delay rather than expedite needed adjustments"); id. At A-19 ("Overall, this decision-making arrangement does not seem to bring enough authority and resources for adaptive management to be implemented decisively and in a timely way. With this structure, each cycle of adaptive management would probably occur very slowly, if at all.").</p>	<p>Please see Master Response 33 regarding the BDCP adaptive management and monitoring program.</p> <p>Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive management. It is assumed the Collaborative Science and Adaptive Management Program (CSAMP) developed for Alternative 4A would not, by itself, create nor contribute to any new significant environmental effects; instead, the CSAMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 4A.</p>
1723	101	<p>The dispute resolution process is unclear and could lead to decision-making paralysis or purposeful delay tactics.</p> <p>The Governance Chapter and Draft Implementing Agreement detail a dispute resolution process that is vague and time-consuming. Draft Plan at 7-17; Draft IA at 66-67. First, in reviewing the details of this process, it appears that the process could take as little as six weeks or may have no end in sight. While the process details various 14-day deadlines, there does not appear to be any specified deadline in which the parties submit written positions to the panel and the panel is convened. In addition, since the decisions of the panel are non-binding, the real heart of this process is determining which entity has decision-making authority over which decision. While Table 7-1 provides some details for some of the bigger decision-making points/plans, this dispute process could be triggered on any number of other decision points. At a minimum, this process needs to be detailed and clarified.</p> <p>In addition, there is some question as to the utility of the dispute resolution process including the process-laden panel. A positive view of this process is that it provides an additional forum to air differences. A negative view is that this could result in abuse by certain parties in an attempt to delay decisions and actions. In any event, this process could become a costly and time-consuming process if appropriate sideboards are not included in this section.</p>	<p>Please see response to comment 1723-97 the Draft Implementing Agreement.</p>
1723	102	<p>Significant modeling flaws in BDCP understate likely environmental impacts and must be corrected to provide accurate impact assessments.</p> <p>The water operations and delta hydrodynamics modeling for BDCP contains errors and faulty assumptions, which are used as input data for other analyses, resulting in flawed conclusions in the DEIS/DEIR.</p> <p>The flawed use of the CALSIM II and DSM2 models for BDCP understates environmental impacts. The BDCP DEIS/DEIR warns: "Given the relatively generalized representation of the RPAs (Reasonable and Prudent Alternatives) assumed for CALSIM II modeling, much caution is required when interpreting outputs from the model." DEIS/DEIR at 5A-B199. The CALSIM II model results are not just used for water operations, but are the basis for many other analyses, including Delta hydrodynamics, water temperature, fisheries (habitat, production, and survival), terrestrial habitat, economics, power generation and use, and recreation. There is often no disclosure of how much caution was used when CALSIM II input was used in these analyses. The BDCP Independent Scientific Review Panel also expressed concern over a "lack of consideration of propagation of errors or sensitivity analysis in linked models," and suggested a methodology for assessing uncertainty in linked models. DSP Independent Review Panel Report 2014 at 40-41. [Footnote 32: The report is available online at:</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The CALSIM II is a prospective modeling tool, not a predictive model; and is used to compare alternatives, and not a predictive model to identify absolute values. Therefore, the Draft EIR/EIS impact analysis compares the results for conditions under the action alternatives to conditions under the Existing Conditions and the No Action Alternative. The CALSIM II model results cannot be used to predict absolute values; therefore, identification of specific uncertainty ranges would not be appropriate. However, the CALSIM II model can be used to compare existing and future conditions in order to compare potential changes and trends in the environment under the action alternatives and to compare those conditions with the Existing Conditions and the No Action Alternative. For additional information regarding modeling, please see Master Response 30.</p>

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		<p>http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf and is included with the supplementary and supporting materials we have included on a CD with our written comments.]</p> <p>These CALSIM II model results that require "much caution" to interpret, see DEIS/DEIR at 5A-B199, are presented and used in other analyses at a level of specificity that is not cautious, propagates errors, and overstates certainty. According to DWR,</p> <p>"CALSIM II provides a reasonable planning level simulation of existing project operations, recognizing that the operating environment and regulatory requirements for the projects are in a constant state of transition and change. Since CALSIM II is not a detailed operations model, it does not capture many of the complexities of forecasted and actual operations of project facilities."</p> <p>(See California Department of Water Resources website at: http://baydeltaoffice.water.ca.gov/modeling/hydrology/CalSim/Downloads/CalSimDownloads/CalSim-IIStudies/Benchmark/index.cfm.)</p> <p>These limitations of the CALSIM II modeling of the BDCP means that the Draft Plan and DEIS/DEIR are not capable of reproducing actual historic operations or likely future operations at the timescale and accuracy required to adequately analyze the environmental effects of the project.</p>	
1723	103	<p>The BDCP DEIS/DEIR states "The CALSIM II model is most appropriately applied for comparing one alternative to another and drawing comparisons between the results. This is the method in which CALSIM II is applied for the BDCP." DEIR/DEIS at 5A-A15. If the value of the modeling results is relative, with unknown or undisclosed relation to actual outcomes, then the BDCP DEIS/DEIR cannot accurately assess whether biologically relevant thresholds of significance are likely to be achieved, or how projected outcomes can be related to goals and objectives. With only relative modeling results presented in a way that fails to disclose context and uncertainty, it is difficult to assess the accuracy of the evaluation of whether the BDCP alternatives are likely to achieve the BDCP's biological objectives.</p> <p>In numerous locations the CALSIM II and other physical model results are presented as if they were likely to be actual, not relative, results. Conclusions are commonly drawn without regard to the warnings cited above and they are not qualified with confidence intervals or reference to the level of uncertainty inherent in model outputs. This makes it hard to trust any of the modeling output. Examples of this lack of disclosure of uncertainty include:</p> <ul style="list-style-type: none"> - Relative to the No Action Alternative, average annual Delta exports under Alternative 4 Scenario H4 (High Outflow Scenario) are expected to decrease by 27 TAF. DEIS/DEIR at 11-52. This is equivalent to just 0.6% of the average annual export. There is no context provided for interpreting whether such a tiny deviation will actually materialize. There is no discussion of what the margin of error is for the modeled results -- an important piece of information, given all the cautionary statements about use of model results. It is thus not possible to distinguish this extremely small projected decrease in exports under the HOS from a potentially substantial 18% increase in exports under the Low Outflow Scenario. - At times, multiple hydrodynamic models were compared, each generating unique results. Yet these differing results are often described in vague terms, with just a few selected examples. For example, DSM2 models ROAs (Restoration Opportunity Areas) as channels or 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The physical models developed and applied in the EIS analysis are generalized and simplified representations of a complex water resources system. The relatively coarse level of resolution and degree of uncertainty associated with these models reflect the difficulty in representing a complex water system and the inherently uncertain ecosystem responses. CALSIM II is a modeling tool that simulates projected future conditions, it is not a predictive model; and is used to compare alternatives, and not a predictive model to identify absolute values. Therefore, the Draft BDCP EIR/EIS impact analysis compares the results for conditions under the action alternatives to conditions under the Existing Conditions and the No Action Alternative. The CALSIM II model results cannot be used to predict absolute values; therefore, identification of specific uncertainty ranges would not be appropriate. The model results are only useful in a comparative analysis, which is appropriate for a NEPA analysis and comparison of alternatives. Nonetheless, these tools represent the best available and appropriate tools for this application. The details of these models and their limitations are presented in Appendix 5A. By using the models in a comparative manner, the results of the analysis are less affected by the limitations and uncertainties.</p> <p>Delta exports under Alternative 4 H4 as described in Chapter 5 of the Draft BDCP EIR/EIS, would remain similar as compared to exports under No Action Alternative.</p> <p>As noted in the Appendix 5A, Section A.5.5 water quality results inside the water bodies representing the tidal marsh areas were not validated specifically and because of the bottom elevation assumptions, preferably do not use it for analysis. Further, it was also noted that the DSM2 model was providing a reasonable representation of the expected change in flow and salinity under restoration and/or sea level rise conditions compared to the higher dimensional models, both in terms of magnitude and direction of change.</p> <p>The limitations of the UNTRIM calibration are described in the Appendix 5A Section D Attachment 3. As noted in the Appendix 5A Section D Attachment 1, WY 2002 was selected as it was a dry year and had a</p>

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		<p>reservoirs. It does not allow dry channels or reservoirs, see DEIS/DEIR Appendix 5A Section D Attachment 4 at 6, and sets the depth of all ROAs to -10.1 feet to prevent drying. This extra volume has the potential for increased dilution of salinity and other constituents in ROAs. Despite adjusting channel roughness in DSM2 to match the tidal and flow range in the RMA model, see DEIS/DEIR Appendix 5A Section D Attachment 4 at 10, there is not good agreement between the models at Prisoners Point and there is a "slight" underprediction of flows toward the Sacramento River in DSM2 at Three Mile Slough. Id. at 11. Differences due to the ROAs are "considered to be within acceptable limits for the purpose of this analysis," id., however the acceptable limits are not disclosed, and without peer review, this statement lacks both specificity and credibility.</p> <p>- UnTRIM-model-predicted salinity at Jersey Point was 20% below observed values and DSM2 was about 20% higher than observed. UnTRIM underpredicts salinity in central and south Delta while DSM2 did "well," so UnTRIM was used here only to corroborate trend with sea level rise. DEIS/DEIR Appendix 5A Section D Attachment 4 at 13. No information is given why UnTRIM underpredicted salinity in these areas, and whether the flaw affecting salinity might also affect sea level rise predictions. The reason why the 2002-2003 period was chosen for corroboration was not explained -- was there adequate variation during this period representative of the variation predicted with the project, including potential ROA configurations and sea level rise?</p> <p>- The range of outcomes from TRIM/RMA versus DSM2 and CALSIM II is limited to only one potential set of Restoration Opportunity Area (ROA) configurations. See DSP Independent Science Review Panel Report 2014 at 41. The ROA configuration significantly influences hydrodynamics in the Delta, id., yet details of the ROA configuration are not provided, nor is a sensitivity analysis to other potential ROA configurations. The result is poor model agreement when the Delta Cross Channel is open, and more uncertainty in the results of all related analyses, including salinity distribution and attainment of water quality standards.</p>	<p>typical range of inflows and exports in the Delta.</p> <p>Proposed tidal habitat restoration in the Delta under Alternative 4 was evaluated at a programmatic level in the Draft BDCP EIR/EIS. Given the potential effect of restoration on the Delta hydrodynamics, a representative restoration configuration was assumed for the Draft BDCP EIR/EIS. Assumed Restoration Opportunity Area configurations were included in Attachment 2 for RMA Bay-Delta model and Attachment 4 for DSM2 model in the Appendix 5A Section D. Attachment 5 of the Draft BDCP EIR/EIS Appendix 5A Section D, provided the sensitivity of Delta hydrodynamics and salinity transport to various potential restoration configurations using the RMA Bay-Delta Model.</p>
1723	104	<p>If modeling studies are to characterize that multiple environmental objectives of the BDCP can be met, modeling assumptions must adhere to the same principles as the operating criteria. This is not the case with the physical models used by BDCP, where many unjustified or incorrect assumptions have been made. Unrealistic modeling assumptions (we expand upon these below) include:</p> <p>Generalized representation of RPAs (in CALSIM II) resulting in unreliability of model output used for other analyses;</p> <p>Use of X2 estimates from CALSIM II that are unusable for comparison with actual historic operations and conditions, resulting in a lack of disclosure of the likely pattern of water management or the ability to attain other objectives;</p> <p>- The BDCP version of CALSIM II underestimates north Delta exports, overestimates south Delta exports, overestimates net Delta outflow, and underestimates total exports, resulting in flawed input to every analysis that uses CALSIM II flows and exports in the Delta.</p> <p>- Use of physically unjustified dispersion coefficients in DSM2-QUAL resulting in inconsistent model performance and unreliable results spatially and temporally;</p> <p>- Failure to account for full residence time of particles diverted and returned to Delta waterways by agricultural diversions (in DSM2) resulting in a lack of disclosure of likely</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The physical models developed and applied in the EIS analysis are generalized and simplified representations of a complex water resources system. The relatively coarse level of resolution and degree of uncertainty associated with these models reflect the difficulty in representing a complex water system and the inherently uncertain ecosystem responses. CALSIM II is a modeling tool that simulates projected future conditions, it is not a predictive model; and is used to compare alternatives, and not a predictive model to identify absolute values, and compared to historic values. Therefore, the Draft BDCP EIR/EIS impact analysis compares the results for conditions under the action alternatives to conditions under the Existing Conditions and the No Action Alternative. The CALSIM II model results cannot be used to predict absolute values; therefore, identification of specific uncertainty ranges would not be appropriate. The model results are only useful in a comparative analysis, which is appropriate for a NEPA analysis and comparison of alternatives. Nonetheless, these tools represent the best available and appropriate tools for this application.</p> <p>The details of the models used and their limitations are presented in Appendix 5A. By using the models in a comparative manner, the results of the analysis are less affected by the limitations and uncertainties. For additional information regarding modeling, please see Master Response 30.</p> <p>Representation of RPAs in CALSIM II was developed in close coordination with fishery agencies who provided the BiOps.</p> <p>It is not clear what the basis of the statement regarding underestimation of north Delta exports. The BDCP</p>

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		<p>longer residence times and associated water quality impacts;</p> <ul style="list-style-type: none"> - Incorrect assumption that components in the particle tracking model (DSM2-PTM) act in a conservative manner throughout the system resulting in the failure to properly characterize the transport and residence time of water quality constituents; - No changes in upstream reservoir management in CALSIM II based on downstream river temperatures, resulting in a lack of disclosure of likely reservoir operations and releases or ability to attain water quality and other objectives; - Failure to properly modify operations enough to eliminate or reduce EC exceedances, resulting in a lack of disclosure of the water management required to achieve compliance or ability to attain water quality and other objectives; - Failure to account for reasonably foreseeable water supplies and conservation opportunities, resulting in unrealistic operations. 	<p>modeling shows north and south Delta exports consistent with the assumptions used in the model. The assumptions used were consistent with the project description included in Chapter 3 of the EIR/EIS.</p> <p>QUAL performance is clearly documented in Appendix 5A Section D, Attachment 1</p> <p>PTM model cannot track the particles leaving the Delta through the in-Delta agricultural diversions. This limitation is common to the PTM modeling of the No Action Alternative as well as various BDCP/CWF Alternatives.</p> <p>PTM was not used in characterizing the water quality changes in the Delta for the BDCP EIR/EIS. For residence time analysis it is reasonable to assume particles are conservative. This assumption is consistent to all the BDCP/CWF Alternatives modeling.</p> <p>Even though there are no changes in upstream reservoir management in CALSIM II based on downstream river temperatures, the temperature modeling based on the CALSIM II results provides an indication of the changes in the temperatures. These results were documented in the EIR/EIS, and the effects of these temperatures were considered on various fish species, and if needed mitigation measures were identified.</p> <p>As notes elsewhere the Delta water quality exceedances are a result of modeling limitations.</p> <p>The No Action Alternative and the BDCP/CWF alternatives included all reasonably foreseeable actions that would potentially affect the plan area. Chapter 3, Attachment 3D includes the rationale and projects/actions that were considered to reasonably foreseeable.</p>
1723	105	<p>In addition to the inability to convert modeling results into likely real-world impacts (their "relative nature") and the false precision accorded to some, but not all, of these outputs, the results of the BDCP modeling analyses are at times simply incorrect. For example, the X2 results in CALSIM II are not consistent with other studies, rendering them unusable for comparison. The ANN model approximates DSM2 model-generated salinity, and is used in CALSIM II to calculate X2. DEIS/DEIR at 5A-A7. But X2 calculated by CALSIM II using the ANN model differs substantially from that determined by the relationship with Delta outflow as calculated by Jassby et. al. 1995. See Mount and Saracino et al. 2013 at 48. The Jassby equation has been used by previous studies of X2-fish relationships, is used by DWR in the DAYFLOW program, and is the equation recommended by the Interagency Ecological Program. See Delta Science Program, Panel Report, Workshop on Delta Outflows and Related Stressors, May 2014 ("DSP Outflows Review Panel Report 2014"), at 8, available online at http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Outflows-Report-Final-2014-05-05.pdf. [Footnote 33: This review also found substantial discrepancies between modeled and actual X2 locations, particularly when X2 is seaward of 56 km or landward of 81 km. Id. at 12.] No explanation is given why the BDCP analysis fails to provide a calibration of the CALSIM II methods with the Jassby methodology or with actual X2. As presented, the X2 results in the DEIS/DEIR cannot be compared to numerous other studies that have documented Delta outflow needed to produce specific benefits in this ecosystem. As a consequence, the DEIS/DEIR presents contextually confusing X2 results that make it difficult for the public and decision-makers to adequately evaluate the DEIS/DEIR's outcomes and conclusions. This information is then used to arrive at a potentially erroneous and inadequate assessment of the environmental consequences of BDCP. A proper approach would be to calibrate the two X2 models with observed data and reveal in the EIR/EIS how the models differ and the implications of those differences for different analyses that depend upon CALSIM II X2 output.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As noted in the Section 3.3.2 of DWR's 2008 Annual Progress Report (http://baydeltaoffice.water.ca.gov/modeling/deltamodeling/AR2008/2008_Annual_Report_Final.pdf), CALSIM II used to rely upon Kimmerer-Monismith (KM) equations to calculate X2 (salinity of 2 parts per thousand [ppt]) locations in the Delta for a given Delta outflow. The KM empirical formula was developed based on the observed data. This equation ceases to be valid when the downstream boundary stage is different from historical conditions. For consistency and comparability across the BDCP EIR/EIS Alternatives, DSM2 model was used to develop new Artificial Neural Networks (ANNs) for X2 for the base case and different sea-level-rise and restoration scenarios and were implemented in CALSIM II. In all the recent planning studies which relied on CALSIM II model, X2 values are estimated based on the ANNs.</p>

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1723	106	<p>Another example of incorrect results from the CALSIM II modeling is due to a flaw that was not fixed in the BDCP-modified CALSIM II model. An independent effort found that the BDCP version of the CALSIM II model underestimates the north Delta diversions by 700,000 acre-feet per year, and overestimates the south Delta diversions by 500,000 acre-feet per year. See MBK Engineers 2014. [Footnote 34: Walter Bourez of MBK Engineers gave an initial presentation of their modeling results to the Delta Stewardship Council's Independent Science Board on January 17, 2014. That presentation is available online at: http://deltacouncil.ca.gov/get-document/7219. We understand that a more detailed review will be submitted as formal comments to BDCP.] Their review concluded that BDCP would result in 34% less Delta outflow and 41% more export than is disclosed in the BDCP DEIS/DEIR. This 200,000 acre-foot overestimate of net Delta outflow in the BDCP version of the model results in an unrealistically rosy picture of Delta outflow in the DEIS/DEIR, and thus the DEIS/DEIR understates the environmental impacts on species dependent on Delta outflow. See also Mount and Saracino et al. 2013 at 48, 64-66. At times, the expected Delta outflow would not actually materialize under BDCP because the water can be exported or stored upstream. The incorrect proportion of exports between north and south in the BDCP model is also a problem because it results in flawed conclusions about changes in residence time, Old and Middle River flows (OMR) and entrainment, Sacramento River flows (and salmonid survival rates), and other effects of the north Delta diversions. Residence time in the south Delta will be much greater than BDCP discloses, and the effects of the north Delta diversions (on flow, entrainment, sediment, etc.) will be much greater than disclosed. These errors also affect the water supply analysis in the DEIS/DEIR, since the timing of diversions will differ from the timing derived from BDCP modeling. This has cascading effects on all of the other analyses that depend on CALSIM II, including the analysis of upstream reservoir operations and of export timing and magnitude, as well as Delta hydrodynamics and fisheries impacts. BDCP must revise the CALSIM modeling to correct this significant error, which propagates through virtually all of the environmental analyses. Without such revisions to the models, the entire BDCP Effects Analysis fails to accurately assess likely environmental impacts and is inadequate.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 30.</p> <p>The EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the BDCP EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the BDCP EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the BDCP EIR/EIS.</p> <p>The aggregate effect of the changed assumptions under MBK's modeling of Alternative 4 is resulting in increased Delta exports and a corresponding reduction in Delta outflow compared to the BDCP EIR/EIS.</p> <p>As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting Delta outflow will be different under Alternative 4 compared to the No Action Alternative. The effects of changes in Delta outflow on water quality, fisheries and other environmental resources under Alternative 4 are analyzed in respective resource chapters of the EIR/EIS.</p> <p>MBK's modeling of Alternative 4 does not allow for the discretion and operations flexibility available for the Delta exports in the summer months, which results in a different split in the exports from the north Delta versus the south (through) Delta compared to BDCP EIR/EIS modeling. As noted in the Tables 5-7 through 5-9 of the Draft BDCP EIR/EIS, depending on the decision tree outcome of H1 through H4 scenarios, the resulting north versus south Delta exports will be different under Alternative 4 compared to the No Action Alternative. The range of water quality effects under Alternative 4 as a result of these export changes are analyzed in Chapter 8 of the Draft BDCP EIR/EIS.</p>
1723	107	<p>In addition, the lack of adequate validation and calibration of the DSM2 model leads to it overestimating salinity in the summer and fall and underestimating salinity in the winter and spring, which has significant environmental impacts that are not identified in the document. We have previously noted the failure to properly validate and peer review the BDCP-altered CALSIM II and DSM2 models. See The Bay Institute, Environmental Defense Fund, Contra Costa Water District 12/21/11 letter at 10-11. In their efforts to update the DSM2-QUAL model, BDCP modelers failed to calibrate and validate the model appropriately for prediction of electrical conductivity. This results in spatial and temporal unreliability, under and overestimates of the amount of certain types of habitats, the false attainment or non-attainment of water quality standards, and incorrect estimates of the amount of freshwater flow needed to attain those targets.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter believes that the calibration and validation of the DSM2 was inadequate. Section A of Appendix 5A of the EIR/EIS discusses the DMS2 and the calibration and validation conducted by CH2M Hill in 2009.</p>
1723	108	<p>DSM2 consists of three linked models: HYDRO, QUAL, and PTM. The DSM2-HYDRO model predicts hydrodynamics in the Delta. The BDCP-modified DSM2-QUAL model predicts EC (a measure of salinity, which is a key attribute of environmental conditions for most aquatic organisms) and other water quality parameters in the Delta under the BDCP alternatives. DSM2-QUAL was last calibrated in 2000 prior to the BDCP calibration. To calibrate the model, channel dispersion factors (increased dispersion causes greater salinity transport) were changed. In contrast to the much better performance (i.e. model output more closely matches observed data) of DSM2-HYDRO (hydrodynamics) compared to the 2000 calibration, changes in DSM2-QUAL model performance (EC) are inconsistent, and "the EC</p>	<p>As noted in the Appendix 5A Attachment 1, the dispersion coefficients were changed to minimize the overall error between the modeled and observed EC values at various locations across the Delta. This is consistent with the common model calibration practices. Given the focus was on Delta-wide performance, DSM2 predictions at some locations improved and some slightly worsened relative to 2000 calibration. Given that available observed EC data was limited in the Delta, to calibrate the model over a wide range of hydrologic and salinity conditions, it was decided that QUAL would be calibrated over the entire HYDRO validation period.</p> <p>Also, it is important to note that DSM2 was recalibrated to recognize the projected sea level rise effects</p>

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		<p>results indicate slightly worse performance compared to the previous calibration." DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 6-2, 6-4. Problems with the EC calibration include:</p> <ul style="list-style-type: none"> * Dispersion coefficients were changed in an ad hoc manner to get better performance (model matches to the observed data) at Emmaton (a compliance point), however this resulted in worse performance at Old River at Holland Cut, South Delta export locations, and Rio Vista compared to the 2000 calibration. This also resulted in a low point in dispersion coefficients at Rio Vista, which according to the DEIS/DEIR "may not be justifiable from a physics standpoint and should be addressed in subsequent analyses." DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 6-2. No subsequent analysis was performed for the DEIS/DEIR. DEIS/DEIR Appendix 5A Section D Attachment 1 Table 6-1 shows the dispersion factors that were changed -- but it does not disclose which changes are physically justifiable in the real world. Using unjustifiable dispersion coefficients means that water quality results and conclusions drawn from DSM2-QUAL outputs for individual stations are suspect and may not be representative of the likely conditions under BDCP. Given these flaws, the DEIS/DEIR states that the lower Sacramento River stations should be viewed as a group. DEIS/DEIR Appendix 5A, Section D, Attachment 1, Table 6-3. However the results are not presented as a group, and instead BDCP inappropriately focuses on results at individual stations, such as the Emmaton compliance point. * BDCP modelers failed to use a different validation period than the calibration period. Use of a separate validation period is a standard modeling practice that ensures the model calibrations are relevant to other time periods. Using the same calibration and validation periods is flawed because model assumptions may not be correct during different periods of time. This calibration used the eight years 2001-2008 based on a discussion with DWR staff that concluded there was a need for a long period with dry years. Unfortunately, the decision to use this long calibration period resulted in an invalid validation, since development of a separate validation period (a standard practice) did not occur due to lack of EC data outside of that period. DEIS/DEIR Appendix 5A, Section D, Attachment 1, Section 6. Without validating the model against another time period, the unjustified calibrations discussed above enable the model to match the 8-year calibration period chosen but their relevance to other time periods is unknown. As a probable consequence, DSM2-QUAL overestimates salinity in summer-fall and underestimates salinity in winter-spring. DEIS/DEIR Appendix 5A Section D Attachment 1 at 6-2, 6-3. It also performs worse outside of dry and critical years. DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 7-1. * EC boundary conditions at the upstream and downstream edges of the modeled area were not verified, but flow and stage verified with 2001-2004 data, and mismatches were corrected to use observed flows. DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 2-4. The need for flow and stage corrections during the 2001-2004 verification period indicates that mismatches outside of that period should have been corrected as well, yet no verification outside that period occurred. No explanation for the differences is given, leaving the impression there is a lack of understanding of why the model differs so much from reality during the verification period: Mokelumne River 9% of the time, Calaveras River 2% of the time, Sacramento River 1% of the time. Presumably, mismatches occur outside the verification period at the same rate. The implications of the mismatches on model accuracy and the lack of corrections outside the verification period cast doubt on modeled results and on the quality of the analysis of the environmental impacts of BDCP. <p>The DEIS/DEIR concludes that, "the channel dispersion factors were modified to simulate EC</p>	<p>using the results from three dimensional UnTRIM model. This recalibrated model was what used in the analysis of EIR/EIS Alternatives 4A, 2D and 5A.</p> <p>For additional information regarding modeling, please see Master Response 30.</p> <p>Upstream EC boundary conditions (Sacramento, Mokelumne, Cosumnes, Calaveras and Yolo) were all assumed to be constant values, as these sources are typically fresh relative to the EC values of the San Joaquin River, Ocean water and agricultural drainage. The seasonal variability in the EC at these upstream sources would have negligible effect on the EC at other Delta locations.</p>

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		<p>accurately." DEIS/DEIR Appendix 5A, Section D, Attachment 1, Section 7-1. Yet this is not the case since performance is often worse, and the changes were not justified, and the validation failed to use a different period than the calibration period. [Footnote 35: Calibration and validation have been defined by the American Society of Testing and Materials, as follows (ASTM, 1984. Standard Practice for Evaluating Environmental Fate Models of Chemicals. Designation E978-84. American Society of Testing Materials. Philadelphia, PA. 8 p.): Calibration - a test of the model with known input and output information that is used to adjust or estimate factors for which data are not available. Validation - comparison of model results with numerical data independently derived from experiments or observations of the environment.]</p>	
1723	109	<p>Despite the improved ability of the BDCP version of the DSM2-HYDRO model to predict hydrodynamics, the BDCP DEIS/DEIR identifies problems noted a decade and a half ago that remain unfixed in the hydrodynamics modeling. The DSM2-HYDRO model could have a datum problem at Rio Vista, where tidally-averaged stage is .7 feet lower than the observed water levels. This is similar to the error observed during the 2000 calibration effort. No additional investigation appears to have occurred and there is no mention of the feasibility of fixing this error. Due to this error, "tidally-averaged metrics were not used as the key metric in assessing the stage calibration." DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 4-5. However the implications of the lack of access to a reliable tidally-averaged metric are not explained. The possible relationship of this error in DSM2-HYDRO to the physically unjustified low point in dispersion coefficients at the same location in DSM2-QUAL is also not discussed. These seem likely to be related, and perhaps a simple resurvey of the datum used at Rio Vista would solve both errors. This is important because an error in the DSM2 model known for over a decade was not fixed when it was potentially feasible to do so, there was no disclosure of the steps needed to fix the error, and that error is in a location that has an important influence on tidal flows, salinity, and freshwater outflow. Failure to fix a basic error propagates that error in all the scenarios modeled. In a system with so much uncertainty, and so many important resources at stake, BDCP modelers must attempt to fix errors where they are identified, and identify why it is infeasible to fix errors when it is difficult to do so. The presence of such an error, even if limited in scope and significance, is an example of how BDCP's flawed modeling approaches have resulted in other errors we have discussed here. These compounded errors and faulty assumptions make the BDCP modeling an unreliable foundation for all the analyses discussed in the DEIS/DEIR.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>DSM2 calibration and performance for flow and salinity at Rio Vista is good compared to the observed data. Similarly, DSM2 performance is good compared to the observed stage, flow and salinity at other locations in the vicinity of Rio Vista. This implies that the datum error is not likely in the DSM2 and it simply could be that the observed water levels are likely with respect to a different datum than the datum used in the DSM2.</p> <p>In recent years, there has been considerable emphasis placed on development of modeling tools to evaluate environmental changes associated with CVP and SWP operations. The modeling tools applied in the EIR/EIS are the same as those used in the most recent applications. The relatively coarse level of resolution and degree of uncertainty associated with these models reflect the difficulty in representing a complex water system and the inherently uncertain ecosystem responses. Nonetheless, these tools represent the best available, peer-reviewed, and appropriate tools for this application. The details of these models and their limitations are presented in Appendix 5A. For additional information regarding modeling, please see Master Response 30.</p>
1723	110	<p>The particle tracking model, DSM2-PTM, as used in the DEIS/DEIR Chapter 8 water quality analysis (and described in DEIS/DEIR 5A-A54) likely underestimates residence time, resulting in an underestimate of BDCP's impacts on water quality. Particles are removed from the system when they are diverted by agricultural intakes within the Delta, reducing residence time. Many constituents are not consumed by agriculture, so when the water is discharged back to Delta channels, the constituents return to Delta channels, concentrated by consumptive use. We stated previously, see 12/21/11 The Bay Institute, Environmental Defense Fund, Contra Costa Water District letter, at 13-14, that the analysis should be modified to properly account for the true residence time in the system. NMFS agreed that the DEIS/DEIR Chapter 8 water quality analysis is flawed. In a July 5, 2013 letter, NMFS stated:</p> <p>"CALSIM and DSM2 were used for all constituents (with additional organism tissue models for selenium and mercury). However, DSM2 only directly models electrical conductivity (EC) and dissolved organic carbon (DOC). Other constituents were modeled as relationships to EC or using mass-balance calculations and outputs from CALSIM and DSM2 with the</p>	<p>With regards to the particle tracking model, the water quality analysis included in Chapter 8 did not make use of this model in the DEIR/DEIS. In the FERI/EIS, this model is only used as a rough indicator of changes in residence time for alternatives including extensive restoration. The numbers presented as "residence time" in the selenium and microcystis assessments of the water quality chapter for these alternatives are not true residence times, but do provide an indication of the direction and magnitude of anticipated residence time changes under the alternatives, relative to Existing Conditions and the No Action Alternative.</p> <p>The water quality assessment and use of modeling output is appropriate for the scale of the project, scope of affected environment, and timeframe over which the assessment was conducted. As noted by the comment, limitations of the modeling assessment as applied to the water quality assessment have been noted, and text has been added to Section 8.3.1.1, Models Used and Their Linkages, and "Quantitative Assessments" within Section 8.3.1.3, Plan Area, of Chapter 8, Water Quality, describing validation of the models used for the assessment, and modeling limitations and uncertainty. These limitations and uncertainties do not render the portions of the water quality assessment that relied on modeling output invalid. On the contrary, the modeling output provides extensive information from which to assess changes of the project and make comparisons of effects (e.g. multiple years, multiple locations). And the</p>

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		<p>assumption that the constituents act in a conservative manner throughout the system, which is not universally applicable and could lead to inaccurate results. This method also results in a hybrid analysis which produces numerical output (seemingly quantitative) that is actually intended to be considered "qualitative" for several very important parameters such as DO, nitrogen, phosphorus and turbidity [see Table 8-61]. This approach also does not take into account the likely interaction of constituents, such as that between DO and DOC, or DO and temperature."</p> <p>(NMFS 2013, "Big Picture" Issues for the 2013 Admin Draft BDCP EIR/EIS, at 6, available online at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Federal_Agency_C omments_on_Consultant_Administrative_Draft_EIR/EIS_7-18-13.sflb.ashx.)</p> <p>The DEIS/DEIR acknowledges problems with DSM2-QUAL as well, cautioning that, "[s]ignificant uncertainty exists in flow and EC (electrical conductivity) input data related to in-Delta agriculture, which leads to uncertainty in the simulated EC values. Caution needs to be exercised when using EC outputs on a sub-monthly scale." DEIS/DEIR Appendix 5A, Section D, Attachment 1 at 7-2. Yet elsewhere the DEIS/DEIR incautiously claims that DSM2 can show daily or less time steps, "which can help understand how salinity moves within the system with more accuracy than CalSim." DEIS/DEIR Appendix 5A, Section D at 5A-208. The limited sub-daily accuracy of the model, when combined with the flawed water quality analysis, casts doubt on the value of the results. A proper approach would be, as suggested by NMFS, to explore additional analytical methods that can better characterize anticipated water quality conditions in the system, or to use smaller-scale models that focus on particular areas of concern.</p>	<p>assessment acknowledged and considered the modeling limitations and modeling output uncertainties as part of making impact determinations.</p> <p>For additional information regarding water quality please see Master Response 14. For additional information regarding modeling, please see Master Response 30. Please refer to Master Response 14 for information regarding Microcystis.</p>
1723	111	<p>The Bay Institute and others have discovered the modeling flaws cited above. It is entirely possible that there are additional unknown flaws and errors in the CALSIM II and DSM2 modeling. We and others have commented before that the models, including the recent modifications, need to be fully documented and properly validated and should undergo a peer review. 12/21/11 The Bay Institute, Environmental Defense Fund, Contra Costa Water District letter, at 10-11; see also "Comments on CALSIM II" from the Environmental Defense Fund, September 14, 2001. The modeling tools (described in DEIS/DEIR Appendix 5A) that simulate statewide operational changes for the SWP and CVP (CALSIM II) and hydrodynamics and transport within the Delta (DSM2) have known limitations in forecasting water supply and water quality conditions in the current configuration of the Delta. These same model tools have undergone numerous changes by the BDCP project team to implement the new OCAP BiOps under current conditions and to forecast conditions in a radically altered Delta. Although long overdue, the additional documentation provided in the public draft is welcome. However, proper validation and peer review are still missing.</p>	<p>In recent years, there has been considerable emphasis placed on development of modeling tools to evaluate environmental changes associated with CVP and SWP operations. The modeling tools applied in the EIR/EIS are the same as those used in the most recent applications. The relatively coarse level of resolution and degree of uncertainty associated with these models reflect the difficulty in representing a complex water system and the inherently uncertain ecosystem responses. Nonetheless, these tools represent the best available, peer-reviewed, and appropriate tools for this application. The details of these models and their limitations are presented in Appendix 5A. For additional information regarding modeling, please see Master Response 30.</p>
1723	112	<p>Certain water quality modeling assumptions are inconsistently applied between alternatives, fail to comply with D-1641 requirements, and fail to reflect likely management during droughts.</p> <p>In addition to some of the salinity problems identified above, the DEIS/DEIR and Draft Plan also contain additional modeling problems and assumptions regarding compliance with existing water quality standards.</p> <p>D-1641 water quality standards require salinity compliance at Emmaton. BDCP proposes to move this compliance location to Three Mile Slough. The document also uses an</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For Alternative 4, which was the proposed project for the DEIR/EIS, the compliance point has been changed from Threemile Slough to Emmaton. Emmaton is also the compliance point for the new proposed project, Alternative 4A, as well as Alternatives 2D and 5A. Please refer to Master Response 14 for additional response regarding the Threemile Slough vs. Emmaton compliance point, as well as exceedance of the EC objective identified in the DEIR/EIS.</p>

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		<p>inconsistent electrical conductivity compliance point -- Emmaton for Existing Conditions and the No Action Alternative, and Three Mile Slough for the proposed project. Due to this inconsistency, BDCP fails to adequately disclose the effects of moving the compliance point, since they are not presented separately from the effects of BDCP's proposed water management and restoration. This proposal would reduce Delta outflow and harm fish and wildlife. Yet all of the alternatives -- including the No Action Alternative -- result in modeled exceedances at both locations, meaning all of the alternatives generate estimates that D-1641 standards will not be met, during some year types, for some of the required durations. DEIS/DEIR Appendix 8H, at Tables EC-1 through EC-20. The document claims that "many" of these are model anomalies, see DEIS/DEIR Appendix 8H, at 8H-1, but as a result of these repeated anomalies in the data, a meaningful evaluation is impossible.</p>	
1723	113	<p>BDCP not only proposes (without any scientific justification) to eliminate the Emmaton electrical conductivity (EC) compliance point, but it conflates this location with Three Mile Slough. The presentation of Emmaton EC and Three Mile Slough EC as equivalent in the BDCP DEIS/DEIR is misleading. DEIS/DEIR Appendix 8H tables EC-1 through EC-20 show exceedances of Water Quality Control Plan objectives for each alternative. The State Water Board previously recommended using Emmaton as the compliance location in the modeling for all of the alternatives, SWRCB 7/5/13 BDCP Comments at 21-22, yet the BDCP DEIS/DEIR fails to do this: the first row of each table (except EC-11) compares the effects on EC at Three Mile Slough under the alternatives to EC at Emmaton under Existing Conditions and the No Action Alternative. This juxtaposition of the two locations implies they are equivalent; however, the second row of each table shows that EC exceedances at Emmaton are expected to occur a much greater percentage of the time than at Three Mile Slough under all scenarios evaluated. This comparison reveals that it is incorrect and misleading to say that EC at Three Mile Slough is the same as EC at Emmaton under any alternative, including No Action and Existing Conditions, and the first row of each table conflating the two locations should be deleted or modified. Since the model appears to be capable of estimating the difference in EC between the two locations under each alternative [Footnote 36: As stated above, the EC analysis is substantially flawed. The DEIS/DEIR admits that water quality results and conclusions drawn from DSM2-QUAL outputs for individual stations are suspect and may not be representative of the likely conditions under BDCP, and therefore the lower Sacramento River stations should be viewed as a group. DEIS/DEIR Appendix 5A, Section D, Attachment 1, Table 6-3. Given that the numbers in the tables are incorrect, our discussion here focuses on the misleading presentation of the results, and not the likely erroneous results themselves.], the table should be modified with actual model output for the Existing Conditions and No Action alternatives at Three Mile Slough. The DEIS/DEIR cannot conflate results for Emmaton and Three Mile Slough. The tables beginning at EC-12 show color-coded results from analyses that were performed on the erroneous comparison -- in addition to deleting this top row, any results and conclusions from it that were used elsewhere should be deleted as well.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>There is no existing compliance point at Threemile Slough, nor would there be one under the No Action Alternative. Therefore, the presentation of modeling results for EC at Threemile Slough under the alternatives relative to the EC at Emmaton is an appropriate evaluation of compliance with a moved location. The comparison of EC at Emmaton under each alternative vs. EC at Emmaton under Existing Conditions or No Action fully evaluates the environmental impact of the project at Emmaton, including the impact of moving the compliance location. Note that for Alternative 4, which was the proposed project for the DEIR/EIS, the compliance point has been changed from Threemile Slough to Emmaton. Emmaton is also the compliance point for the new proposed project, Alternative 4A, as well as Alternatives 2D and 5A. For additional response regarding the Threemile Slough vs. Emmaton compliance point, as well as exceedance of the EC objective identified in the DEIR/EIS, please refer to Master Response 14.</p>
1723	114	<p>The actions of DWR and USBR this year demonstrate that the EC (electrical conductivity) differences between Emmaton and Three Mile Slough are real and that results for the two sites should not be conflated. For instance, the April 9, 2014 Temporary Urgency Change request to the Water Board proposed that while emergency drought barriers are in place, "The compliance location for the D-1641 Agricultural Western Delta Salinity Standard at Emmaton (14-day running average of 2.78 millimhos per) is moved to Three Mile Slough on the Sacramento River." DWR and USBR, April 9, 2014, request for Temporary Urgency Change, at 5, available online at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/031814o</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Emmaton is the compliance point for the new proposed project, Alternative 4A, as well as Alternatives 2D and 5A. All criteria included in the USFWS (2008) and NMFS (2009)</p> <p>BiOps and D-1641 will continue to be complied with, subject to adjustments made pursuant to the adaptive management process as already described in the 2008 and 2009 BiOps, as part of the continued operations of the CVP and SWP. For additional response regarding the Threemile Slough vs. Emmaton compliance point,</p>

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		<p>order_urgchg_swcv/20140409_petitioners_request.pdf (incorporated by reference). DWR and USBR further explained:</p> <p>"These two forecasts show a gain of 149,000 AF in cumulative end of September carryover storage between all reservoirs as a result of implementing the emergency drought barriers. However, as described below, this savings in storage would only be achieved if the D-1641 Agricultural Western Delta Salinity Standard at Emmaton is set aside while the emergency drought barriers are in place. If hydrologic conditions warrant that sufficient water is available in upstream reservoirs to maintain this Emmaton standard, or a modification of the standard that would move the compliance point to Three Mile Slough on the Sacramento River, emergency drought barriers would not provide any savings in Delta outflow needs or end of September carryover storage in upstream reservoirs."</p> <p>(Id.) [Footnote 37: This and other elements of the 2014 Temporary Urgency Change Petitions and Orders raise additional concerns regarding future compliance with water quality and other regulatory standards during dry and drought conditions. BDCP provides no information regarding how often TUCs like this one would be requested, and does not analyze the impacts of such requests. This is yet another undisclosed impact of BDCP. DEIS/DEIR Appendix 8H-1 is misleading where it states that "DWR and USBR have every intention" of meeting D-1641 standards. This does not seem to be the case in certain dry years such as 2013 and 2014, and the effects of similar relaxations of water quality standards and other environmental requirements in the future are not analyzed or disclosed in the DEIS/DEIR, despite the fact that such changes are reasonably foreseeable. According to the 2014 independent panel review of delta outflow and other stressors, "The average measured Delta outflow during fall 2013 was approximately 2,000 cfs, which failed to meet the Board's minimum outflow requirement of 3,000 to 3,500 cfs for fall months of a critically dry year." DSP Outflows Review Panel Report 2014 at 15. Likely future waivers and relaxations of standards modeled in BDCP are yet another example of how the modeling of BDCP fails to accurately assess likely environmental impacts.]</p> <p>The models are "trained" to modify operations to meet the EC standard, although the training is never perfect and generally a few exceedances are found in planning model runs. However, the BDCP runs show far more frequent and extreme exceedances than has been commonly observed in previous planning studies.</p>	<p>as well as exceedance of the EC objective identified in the DEIR/EIS, please refer to Master Response 14.</p>
1723	115	<p>Tables EC-1 through EC-20 show greatly varying exceedances at Emmaton and Three Mile Slough for each alternative. The DEIS/DEIR Appendix 8H-1 (additional descriptions of the model limitations related to the water quality modeling results are found in Appendix 5A) states that "many" exceedances of D-1641 standards are model anomalies, and "DWR and USBR have every intention of operating SWP and CVP facilities by fine tuning reservoir storage and exports in real time to meet D-1641 standards, and any changes to D-1641 as adopted by the SWRCB." DEIS/DEIR Appendix 8H at 8H-1. This statement, when combined with the prevalence of exceedances in the model results, raises many unanswered questions:</p> <ul style="list-style-type: none"> - What proportion of the exceedances are anomalous? Which of the EC exceedances are model anomalies, and which are expected to occur under BDCP? - Is the ability to meet water quality standards more achievable under some alternatives than others? - If the intent is that each alternative will result in exceedances 0% of the time, and all 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please refer to Master Response 14 regarding address of exceedances of the EC objectives identified for the alternatives in the DEIR/EIS as modeling artifacts and Emmaton vs. Threemile Slough as EC compliance points.</p>

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		<p>cases of exceedance are model anomalies: 1) why is there so much variance in the anomalies; 2) what is the purpose of presenting the anomalies without more context, such as error bars; 3) how were these results used in the analysis; 4) what evidence is there to show that there will be no exceedances under any alternative; and 5) under what conditions would exceedances be unavoidable and how often would this situation occur?</p> <p>- If the intent is that exceedances will be minimized, but real differences in EC compliance exist between the alternatives, then the anomalies should be better-characterized so that only the real differences between the alternatives are presented. The way the results are presented combined with the disclaimer, the analysis is not useful, and does not enable a decision maker or the public to answer any of the questions posed above.</p> <p>The DEIS/DEIR states that, "If necessary, comparisons of model results against threshold or standard values should be limited to comparisons based on cumulative probability distributions." DEIS/DEIR Appendix 5A, Section C, at C6. Yet the exceedance of a standard should result in probabilities close to zero, and the lack of such output indicates that the models are inaccurate.</p>	
1723	116	<p>D-1641 sets limits on south Delta exports based on Delta inflow, known as the export:inflow ratio (E/I ratio), during certain months of the year. The inconsistent application of the allowable E/I ratio to the different alternatives and scenarios, see DEIS/DEIR at ES34-ES35, is a long-standing problem with the BDCP modeling. BDCP defines the D-1641-E/I ratio -- except in scenarios H2 and H4 -- to ignore both the inflow to the Delta being exported by the proposed north Delta intakes and those exports, thus exempting the north Delta intakes from compliance with the D-1641 export/inflow requirement. In contrast, the intent of the D-1641 E/I ratio is to limit pumping by the CVP/SWP to a fraction of Delta inflow, regardless of where the CVP/SWP intakes are located. The sensitivity analysis memo (DEIS/DEIR at 5A-D148) characterizes the approach taken in H2 and H4 -- the National Marine Fisheries Service approach -- as minimally different from the BDCP approach, and if this is the case, then it is unclear why a single approach was not universally followed for clarity and simplicity. Using an inconsistent E/I ratio introduces complexity, confusion, and obfuscation where there is no need for it, hampering the transparent and concise disclosure of impacts to decision makers and the public.</p>	<p>As noted in the Draft BDCP EIR/EIS Appendix 5A Section B, the export-inflow requirements under the BDCP EIR/EIS Alternatives are consistent with D-1641. However, most of the Alternatives (1, 2, 3, 4H1, 4H3, 5, 6, 7, and 8) assumed the Sacramento River inflow to be downstream of the north Delta diversion, and did not include the north Delta diversion as part of export calculation in computing the export/inflow ratio. Given the operational modeling included this computation, the resulting flows for these Alternatives reflect this calculation of export/inflow ratio. Therefore, the impact analyses included in the Draft BDCP EIR/EIS already account for this export/inflow ratio computation. The likely operational changes from the different computation approaches of the export/inflow ratio are presented through a sensitivity analysis in the Appendix 5A Section D.10.1 of the Draft BDCP EIR/EIS.</p> <p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. All criteria included in the USFWS (2008) and NMFS (2009) BiOps and D-1641 will continue to be complied with, subject to adjustments made pursuant to the adaptive management process as already described in the 2008 and 2009 BiOps, as part of the continued operations of the CVP and SWP. For additional response regarding the Threemile Slough vs. Emmaton compliance point, as well as exceedance of the EC objective identified in the DEIR/EIS, please refer to Master Response 14.</p>
1723	117	<p>The DEIS/DEIR fails to incorporate CVP/SWP legal constraints on upstream water temperature in its CALSIM II modeling, resulting in a failure to adequately and accurately assess the effects of current and proposed operations both upstream and in the Delta.</p> <p>The BDCP CALSIM II modeling fails to accurately model how reservoirs would be operated to adapt and minimize the effects of climate change and project operations on listed species and water supply, leading to inaccurate modeling results that likely underestimate environmental impacts of BDCP in the Delta. Once again, the documents offer yet another modeling disclaimer, noting that the model results may be unlikely to actually occur: "...the BDCP does not change Shasta Reservoir and upper Sacramento River operating criteria, so that changes in upstream areas derived from modeling, be they positive or negative, may not be fully reflective of the nature of actual changes that could occur." Draft Plan at 5.5.3-45.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 25 regarding upstream reservoir operations.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p>
1723	118	<p>The modeling appendix shows markedly decreased end-of-year storage in Shasta Reservoir under the proposed project late long-term scenario (and even under the No Action Alternative). DEIS/DEIR 5A-C42 to 5A-C45. BDCP CALSIM II model projections for carryover</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p>

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		<p>storage at Shasta Reservoir do not attain those required by the NMFS 2009 Biological Opinion (RPA Action 1.2.1 at 592). In particular, as the graphic below shows (based on information in the DEIS/DEIR), the that the carryover storage targets of 2.2 MAF in 82% and 87% of years and 3.2 MAF in 40% of years in the 2009 Biological Opinion are not attained. [Footnote 38: The DEIS/DEIR fails to demonstrate whether operations will achieve the 2009 NMFS Biological Opinion's performance measures for temperature compliance points on the Sacramento River, but it would appear unlikely given the failure to achieve carryover storage targets. 2009 NMFS Biological Opinion at 592.]</p> <p>The National Marine Fisheries Service Reasonable and Prudent Alternative prescribed these carryover storage targets as the minimum necessary to protect winter-run Chinook salmon (and other listed salmonids) spawning in the Sacramento River. They also provide ancillary protection to fall run Chinook salmon spawning in the same rivers. Modeled operations for all BDCP alternatives lead to significantly worse operational effects upstream on salmon than the minimum required under existing Biological Opinions.</p>	<p>Refer to Figure 4.3.1.6 of the RDEIR/SDEIS for the end of September storage in Shasta Reservoir, which shows that Alternative 4A would be very similar to the No Action Alternative, as would Alternative 4 (described below).</p> <p>As shown in the Shasta Lake carryover storage plot presented in this comment, Alternative 4's performance is similar to that of the No Action Alternative. Simulated carryover storage results in the No Action Alternative and Alternative 4 scenarios are lower than the Existing Conditions primarily due to the projected climate change and sea level rise effects. The EIR/EIS acknowledges that certain operations cannot be captured in the modeling exercise; therefore, effects of some RPA actions that cannot be simulated in the CALSIM II and other models, including implementation of fish passage and Shasta performance measures in the No Action Alternative, are analyzed in a qualitative manner. As noted in Appendix 5A, CALSIM II model cannot adjust the set of predefined rules that represent the assumed regulations to simulate extreme events, such as a prolonged drought, or to perform statistical performance criteria, such as storage target objectives in an assumed percentage of years. For example, benefits that would occur due to inclusion of fish passage and temperature management RPA action at Shasta Lake are only considered qualitatively and described in combination with the quantitative results of the CALSIM II and water temperature models.</p>
1723	119	[ATT 1: Scatter plot of BDCP Modeling Alternatives that do not meet BiOp requirements for Shasta Carryover Storage.]	The comment describes an attachment to the comment letter. The attachment does not raise any additional issues related to the environmental analysis in the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS that are not already addressed in the Final EIR/EIS.
1723	120	<p>Modeling of existing conditions comes close to achieving the National Marine Fisheries Service carryover storage targets for Shasta, and the independent effort by MBK Engineers appears to have used CALSIM II to correctly model BDCP with the required NMFS 2009 Biological Opinion exceedances. Modeling in BDCP needs to be revised to achieve these carryover storage requirements of the 2009 Biological Opinion, as these other efforts demonstrate that such modeling is feasible and has already been prepared. [Footnote 39: In addition, modeling BDCP operations that fail to achieve the carryover storage requirements of the 2009 NMFS Biological Opinion is not consistent with the objectives of the Draft Plan. See, e.g., Objective WRCS3.1 for winter-run Chinook salmon, which states that the BDCP will, "Implement covered activities so as to not result in a reduction of the primary constituent elements of designated critical habitat for winter-run Chinook salmon upstream of the Plan Area).]</p> <p>Unrealistic reservoir management (even under the No Action Alternative) is another significant modeling flaw that makes analyses of downstream operations and environmental impacts inaccurate and unreliable.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 30.</p> <p>All criteria included in the USFWS (2008) and NMFS (2009) BiOps and D-1641 will continue to be complied with, subject to adjustments made pursuant to the adaptive management process as already described in the 2008 and 2009 BiOps, as part of the continued operations of the CVP and SWP.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p>
1723	121	<p>In order to meet existing reservoir carryover storage targets, BDCP likely will have to reduce reservoir releases as compared to modeled operations, which will have cascading impacts on downstream operations (e.g., Delta outflow, Delta inflow, and exports) and on environmental impacts to fish and wildlife.</p> <p>In addition, these same flawed modeling assumptions also result in additional drawdowns of Trinity Reservoir, see DEIS/DEIR Appendix 5A at C10, which would affect that river's Coho and Chinook salmon populations as well as its steelhead. As with the Shasta Reservoir modeling, these drawdowns occur even under the No Action Alternative. These impacts should not and are unlikely to be allowed to occur. As a result, the modeling is unrealistic and misrepresents likely water management and likely environmental impacts under BDCP.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The EIR/EIS presented the difference in conditions under the Existing Conditions and the No Action Alternative and the action alternatives. As are presented in model results included in Chapter 5, Water Supply, Chapter 6, Surface Water, and Chapter 11, Fish and Aquatic Resources, there are periods of time when the stream flows and temperature criteria under existing regulatory requirements are not met. In some cases the alternatives were modified to provide alternate methods to meet water quality and biological objectives to existing regulatory requirements. In other cases, the non-compliance was related to changes in the environment due to climate change and sea level rise. The No Action Alternative and the action alternatives were not developed to mitigate the effects of climate change and sea level rise.</p>
1723	122	Modeling of operations relating to the High Outflow Scenario are flawed, and demonstrate	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred

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		<p>that the High Outflow Scenario is not reasonably certain to occur in many years.</p> <p>BDCP's assumption that outflows sufficient to meet the High Outflow Scenario (HOS) will occur when needed is flawed, and the current approach to achieving the HOS does not appear reasonably certain to occur. BDCP plans to release the enhanced spring outflow in the Alternative 4 High Outflow Scenario from Oroville Reservoir in order to avoid impacting storage in other reservoirs. However if end-of-May Oroville storage is projected to be less than 2 MAF, additional flow is not released, nor is flow released above the 17,000 cfs power house capacity. In drier years, only export curtailment is used to achieve the HOS spring outflow, unless exports would be less than 1500 cfs. The DEIS/DEIR does not clearly document how often these combined limits are expected to prevent the HOS spring outflow from occurring. The end-of-May storage offramp is expected to occur 30% of the time, see DEIS/DEIR, Appendix 5A, at C73, and the 1,500 cfs export offramp is expected to occur as much as 40% of the time, see DEIS/DEIR, Appendix 5A, at C320. As such, it appears that the BDCP HOS will not be achieved a significant portion of the time, contrary to the assumptions in the environmental</p> <p>analyses. [Footnote 40: The 2014 review of BDCP modeling by MBK Engineers also found significant flaws in the modeling of the High Outflow Scenario.]</p> <p>In addition, the proposed reoperation of Oroville Reservoir to achieve the High Outflow Scenario should be peer reviewed. National Marine Fisheries Service has commented in the past that:</p> <p>"the potential temperature compliance point included in the Dec 2012 Settlement Agreement for Licensing of the Oroville Facilities... would require compliance to 64 degrees F from May-September in the high flow channel, and the Robinson Riffle criteria for protection of spring-run Chinook in the low flow channel, which could be affected as a result of changes in end of May storage and resulting diminishment of the cold water pool. Because of the potential biological importance of re-operation of Oroville, we recommend that the entire set of decisions and effects analysis be submitted for independent peer review to further assist in predicting these effects."</p> <p>(NMFS 2013 Progress Assessment at 21.)</p>	<p>alternative.</p> <p>Delta Outflow under Scenario H would be determined by the outcome of the decision tree process needed to account for scientific uncertainties related to spring outflow and Fall X2 requirements for delta and longfin smelt, salmonids, and sturgeon. Thus, there are different potential outflow requirements that could be used for spring and fall. The decision tree process and outcomes are described further in Section 3.6.4.2, North Delta and South Delta Water Conveyance Operational Criteria, for Scenario H. Operational Scenario H was used in the CALSIM modeling for Alternative 4.</p> <p>The HOS is not a component of the preferred alternative, Alternative 4A. Alternative 4A would apply Scenario H differently from how Alternative 4 would implement this operational scenario. The proposed project also incorporates existing criteria from the 2008 and 2009 BiOps (including Fall X2), and adds additional criteria for spring outflow and new minimum flow criteria at Rio Vista from January through August. Alternative 4A starting operations will be determined through the continued coordination process as outlined in the Section 7 consultation process and 2081(b) permit prior to the start of construction.</p>
1723	123	<p>In addition to the failure to properly model the reoperation of Oroville Reservoir or the temperature constraints downstream of it and other reservoirs, the way the temperature model output is presented renders the analysis invalid. One of the appendices states:</p> <p>"There would be small to moderate reductions in May storage and small to moderate increases in September storage under the HOS (high outflow scenario) relative to the ESO (evaluated starting operations). Despite these changes, year-round water temperatures in the Feather River would not substantially [sic] changed by HOS or LOS (low outflow scenario) scenarios, because mean monthly water temperatures would not differ by more than 4% from those under ESO regardless of month or water-year type (Table 5C.5.2-154 through Table 5C.5.2-157)."</p> <p>(Draft Plan, Appendix 5C, at 5C.5.2-292.)</p> <p>This temperature analysis is fundamentally flawed and will likely result in significantly greater environmental impacts than identified in the documents, because:</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 25 regarding upstream reservoir operations.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p> <p>The preferred alternative no longer includes a decision tree or associated HOS, but does include a robust collaborative science and adaptive management plan designed to better understand key scientific uncertainties pertaining to Delta fish and operations, and provides a mechanism for adjustments to operations to ensure that the effects of the CVP and SWP are minimized with the new point of diversion. Initial criteria included in the preferred alternative are those that reduce reliance on the south Delta facilities once the new NDD is operational, addressing the entrainment issues that have occurred in the south Delta for several fish species, while maintaining outflows consistent with the current BiOps.</p>

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		<p>First, a percentage change in temperature is meaningless and an invalid means of determining impacts or comparing alternatives; instead, the focus should be whether the changes exceed biologically important thresholds. Thresholds are biologically more important than absolute differences (or percentage differences). An increase in temperature that crosses a biological threshold is more significant than a larger increase that stays below the threshold. The 3.5% maximum increase predicted for September of Below Normal years under HOS, see Draft Plan, Appendix C, at Table 5C.5.2-156, appears to be based on a 2.1 degree Fahrenheit increase over a temperature of 61 degrees, see Draft Plan, Appendix C, at Table 5C.5.2-154. [Footnote 41: This does not match the other table, even when rounding is considered.] This same increase when measured on the Celsius scale is 7.5%. Regardless of each percentage increase being correct and misleading without additional context, a 2.1 degree F increase in water temperature can have significant lethal and negative sub-lethal effects on salmonid and non-salmonid species.</p> <p>Second, mean monthly water temperatures are a poor indicator of biological conditions -- salmon and other native fish and wildlife respond immediately and dramatically to actual temperature conditions, and lethal and sub-lethal temperature thresholds are frequently measured as daily, 3-day, or 7-day averages. However, a monthly average temperature will frequently be exceeded on a weekly or daily basis -- the frequency and magnitude of the exceedances are inversely related to the length of the relevant timestep. Summertime peaks, daily fluctuation, and exceedance curves for important biological thresholds would provide more accurate assessment of environmental impacts.</p>	
1723	124	<p>The DEIS/DEIR fails to adequately analyze environmental impacts in the Early Long Term (ELT)</p> <p>The DEIS/DEIR generally only provides modeling results for the Late Long Term (LLT -- 60 years from now), and it states that, "For the purpose of BDCP EIR/EIS impacts evaluation, Alternatives' modeling results at LLT phase are considered." DEIS/DEIR Appendix 5A at A-4. The lack of modeling and analysis of operations and environmental impacts in the Early Long Term (ELT, which includes climate change effects in 2025) prevents a meaningful analysis. ELT results are needed to help distinguish the effects of climate change from project operations and to demonstrate the impacts during the first several decades of operations. There are significant changes in operations, flows, and environmental impacts between the ELT and LLT; for instance, this table below shows changes in exports between the ELT and LLT.</p> <p>The DEIS/DEIR Appendix 5A Section C (CALSIM II and DSM2 Modeling Results) presents LLT modeling results only. We echo the comment previously made by the Delta Stewardship Council that BDCP needs to provide modeling results for ELT, not just LLT, in the DEIS/DEIR. Delta Stewardship Council, Responsible Agency Comments, 2013 Administrative Draft, Bay Delta Conservation Plan Environmental Impact Report/Environmental Impact Statement, July 11, 2013 ("DSC 2013 BDCP Comments"), at 17, available online at: http://deltacouncil.ca.gov/sites/default/files/documents/files/DSC_Letter_on_BDCP_Review.pdf (incorporated by reference).</p>	<p>The Draft EIR/EIS impact analysis for the action alternatives was evaluated at Year 2060 conditions (LLT) to cover the largest range of expected impacts that would occur at the end of the anticipated 50-year Habitat Conservation Plan and Natural Communities Conservation Plan permits.</p> <p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p>
1723	125	<p>[ATT 2: Table showing Average Annual Exports under ELT and LLT. Source: Draft Plan, Chapter 5, at Tables 5.3.2 -- 5.3.3. HOS is the High Outflow Scenario and LOS is the Low Outflow Scenario.]</p>	<p>The comment describes an attachment to the comment letter. The attachment does not raise any additional issues related to the environmental analysis in the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS that are not already addressed in the Final EIR/EIS. The preferred alternative no longer includes a decision tree or associated HOS.</p>

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1723	126	<p>The presentation of average results (including flows and temperatures) obscures and understates likely environmental impacts.</p> <p>As the DEIS/DEIR repeatedly warns, model output for a single point in time is not necessarily reliable, and therefore proper use of results requires "much caution" and is limited to a general comparison of relative averages and exceedances on a monthly basis. See DEIS/DEIR Appendix 5 at 5A-A15, 5A-B199, 5A-C5, and 5A-C6. Although some sub-monthly modeling was conducted for the north Delta intakes, and some hydrodynamic modeling used sub-daily flows, BDCP generally used monthly average flows in its hydrologic modeling. At times, annual or year-type averages are presented in the Draft DEIS/DEIR. While use of averages can at times be helpful, it is not always the proper tool for use in assessing impacts, and without proper context, it can obscure potential impacts, especially in biological systems where outcomes are often determined by threshold and extreme values, more than by average conditions.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As noted in the Appendix 5A of the BDCP EIR/EIS, many of the models and tools used relied upon on sub-monthly data (e.g. 6-hour meteorological inputs to the Sacramento River temperature model) in simulating the effects of monthly flow/storage changes on various physical and biological factors. Given that the CALSIM II operational modeling results that are fundamental to the analytical framework used were on a monthly timestep, as much as possible the presentation of the results were limited to a monthly timestep to minimize false certainty on a finer timescale. Therefore, in determining the impacts under various resource areas, available simulated model results were used on a monthly timestep in a comparative manner to determine relative effects, as much as possible. The BDCP EIR/EIS analysis considers changes in magnitude and the frequency in conditions under the action alternatives and the Existing Conditions and No Action Alternative to determine if the changes are adverse or beneficial. The results are presented in the tables with end-of-month storage for the SWP and CVP reservoirs and as monthly average values of other parameters such as flow and salinity, in the BDCP EIR/EIS.</p>
1723	127	<p>Average results from physical models were presented in the BDCP DEIS/DEIR in the following ways that obscure potential impacts:</p> <p>In the in the DEIS/DEIR Appendix 5A Section C, BDCP exports are shown as year-type averages. There can be significant year-to-year variability in exports. Averaging fails to convey that variability and the associated variability in export-related impacts. For example, conditions that produce the highest entrainment values may control outcomes in future years, more than the average, long-term condition (an extreme example would be that an extinction or near-extinction event in one year will not be mitigated by improved conditions in subsequent years). More information than just the average needs to be presented.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>In addition to the year-type average, Delta exports were presented on 10% exceedance intervals in Tables C-10-1-1 to C-10-1-25 of the Draft BDCP EIR/EIS Appendix 5A Section C, which shows the full range of monthly averaged exports. The effects of changes in exports on the Old and Middle River (OMR) flows are presented in the OMR results. Chapter 11 evaluates of the effects of changes in OMR on the potential entrainment.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p>
1723	128	<p>Average results from physical models were presented in the BDCP DEIS/DEIR in the following ways that obscure potential impacts:</p> <p>The averaging period proposed for Old and Middle River (OMR) flows is undisclosed in the Alternative 4 Decision Tree Scenarios. Table B-13 from the DEIS/DEIR, Appendix 5A, Section B lists monthly average flows, yet states that U.S. Fish and Wildlife Service and National Marine Fisheries Service OMR criteria would be met, which require compliance on a 14 day average basis. Without presenting the most-negative flows, the DEIS/DEIR fails to disclose the full impacts to the Delta ecosystem and fails to demonstrate that operations would comply with the Biological Opinions. [Footnote 42: In addition, neither Table B-13 or any other information in the DEIS/DEIR or Draft Plan explains how OMR rules based on water year type will actually be implemented (given the inability to precisely forecast water year type, particularly early in the year), what method of forecasting will be used, and how that may differ from modeled operations and thus modeled environmental impacts. The same is true for other operational parameters that are based on water year type.]</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For more information and specific modeling results for all Alternatives, please refer to Chapter 5, Water Supply, and Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix.</p> <p>The preferred alternative no longer includes a decision tree or associated HOS, but does include a robust collaborative science and adaptive management plan designed to better understand key scientific uncertainties pertaining to Delta fish and operations, and provides a mechanism for adjustments to operations to ensure that the effects of the CVP and SWP are minimized with the new point of diversion. Initial criteria included in the preferred alternative are those that reduce reliance on the south Delta facilities once the new NDD is operational, addressing the entrainment issues that have occurred in the south Delta for several fish species, while maintaining outflows consistent with the current BiOps.</p> <p>Alternative 4 requires the Old and Middle River (OMR) flows to be the higher of the No Action Alternative OMR criteria or the criteria specified in Table B-13 in Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions, in the Draft BDCP EIR/EIS. The OMR requirements are specified as monthly average values depending on the water-year-type. Chapter 11, Fish and Aquatic Resources, presents the evaluation of the effects of changes in OMR on the species in the Delta ecosystem.</p> <p>The preferred alternative no longer includes a decision tree or associated HOS, but does include a robust collaborative science and adaptive management plan designed to better understand key scientific uncertainties pertaining to Delta fish and operations, and provides a mechanism for adjustments to operations to ensure that the effects of the CVP and SWP are minimized with the new point of diversion.</p>

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			<p>Initial criteria included in the preferred alternative are those that reduce reliance on the south Delta facilities once the new NDD is operational, addressing the entrainment issues that have occurred in the south Delta for several fish species, while maintaining outflows consistent with the current BiOps.</p> <p>For more information regarding operational components of 4A please see Chapter 3 of the FEIR/EIS. For additional information regarding decision tree, please see Master Response 44.</p>
1723	129	<p>Average results from physical models were presented in the BDCP DEIS/DEIR in the following ways that obscure potential impacts:</p> <p>The averaging period proposed for Sacramento River bypass flows is undisclosed in the Alternative 4 Decision Tree Scenarios. Table B-13 from the DEIS/DEIR, Appendix 5A, Section B does not state if it is a daily average or an instantaneous flow. The State Water Resources Control Board has expressed concern that reverse flows at Freeport would become more common July-November if BDCP fails to apply the bypass flow on an instantaneous basis. SWRCB 7/5/13 BDCP Comments at 13. The impacts of the proposed averaging period on biological resources must be disclosed.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please refer to Chapter 3 of the Final EIR/EIS for updated operational components for Alternative 4A, the new preferred alternative.</p> <p>The modeling of the north Delta diversions in the DEIR/S assumed application of bypass flow criteria on a daily-averaged basis, and operation of the individual intakes on a 15-min instantaneous basis. As noted in Appendix 5A of the Draft BDCP EIR/EIS, the north Delta diversions will be subjected to a sweeping velocity requirement. In the modeling, a 0.4 feet/second (fps) sweeping velocity requirement was assumed, and when the cross-sectional averaged instantaneous velocity downstream of each north Delta diversion intake falls below 0.4 fps, the diversion at the intake was not allowed. Potential effects due to the bypass flows were assessed in Chapter 11, Fish and Aquatic Resources of the Draft BDCP EIR/EIS.</p>
1723	130	<p>Average results from physical models were presented in the BDCP DEIS/DEIR in the following ways that obscure potential impacts:</p> <p>The DEIS/DEIR appendices do not appear to analyze the effect of changed residence time but rather draw a conclusion based on the average change in residence time over all time periods. DEIS/DEIR Appendix 5C. Residence time is presented for a limited number of time periods of the model simulation period to represent a variety of hydrologic conditions. Residence time in the Delta changes dramatically in response to hydrology and operations. See DSP Independent Science Review Panel Report 2014 at</p> <p>65. Changes in residence time would be expected to alter primary productivity, pH, and temperature, and thus alter transformations of constituents, with longer residence times likely to negatively impact water quality and ecosystem function. However, average change is not relevant to any processes and thus not important to any covered species. This analysis should be expanded and the results should be integrated into other areas of Appendices C and D.</p>	<p>As noted in this comment, residence time is typically used as a surrogate for potential changes in water quality conditions in the Delta. Instead of relying on the residence time, direct estimates of the changes in water quality were computed, as and when possible for the evaluation of the impacts of the Alternatives in the Draft BDCP EIR/EIS and the RDEIR/SDEIS, as described in Chapters 8 and 11. Residence times were estimated and used as a factor in determining the impacts related to Microcystis in the Partially Recirculated Draft EIR/Supplemental Draft EIS. As described in Appendix 5A, DSM2 PTM was used to simulate the residence times for over 20 periods that were representative of the range of Delta hydrologic and operational conditions. For additional information regarding water quality, please see Master Response 30. Please refer to Master Response 14 for information regarding Microcystis.</p>
1723	131	<p>Average results from physical models were presented in the BDCP DEIS/DEIR in the following ways that obscure potential impacts:</p> <p>ESO (evaluated starting operations) flows could be as much as 6500 cfs less than EBC2 flows (in November) when months are evaluated individually, and not grouped by month and water year type. [Footnote 43: In addition, BDCP modeling shows delta outflow in October of many years in excess of BDCP's proposed operational requirements. See Mount and Saracino et al. 2013 at 48, 52, 64-66. They concluded that these modeled outflows, which would substantially benefit delta smelt, are unlikely to occur. Id.]</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Appendix 5A Section C of the Draft BDCP EIR/EIS shows tables with the full range of monthly average flows at 10% exceedance intervals. High Delta outflow in October and November of dry years under Alternative 4 is a result of the significant constraints on the south Delta exports. As noted in the Table B-13 of the Draft BDCP EIR/EIS, October and November operations criteria under the Alternative 4 significantly constrain south Delta exports under Alternative 4 compared to the No Action Alternative. The "scenario 6" criteria specified under Alternative 4 require the south Delta exports to be shut down during the two weeks when fall pulse occurs in the San Joaquin River. Further, in the post-pulse period the exports are constrained to OMR flow greater than -5000 cfs, with Head of Old River Barrier partially closed. In the No Action Alternative, there are no specific export constraints in the fall months, nor is the Head or Old River Barrier</p>

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			<p>operated in this fashion. As shown in the Table B-13, although not as constraining as December through June, the north Delta diversion bypass flow criteria also provide additional restrictions that contribute to fall outflow increases in some drier years. These criteria result in higher Delta Outflows in October months under Alternative 4 compared to No Action Alternative, with similar inflows in both cases.</p> <p>For more information regarding operational components of 4A please see Chapter 3 of the FEIR/EIS. For more information regarding water supply impacts please see Chapter 5 of the FEIR/EIS.</p>
1723	132	<p>In a comment letter on the administrative draft Plan and DEIS/DEIR, National Marine Fisheries Service stated:</p> <p>"The results of these models signal a need for further investigation to determine why they are not what are "expected". It seems that upstream releases between ESO (evaluated starting operations) and EBC2 (existing biological conditions 2) do not match as well as thought, as seen in Plan Table C.A-47 and EIR/EIS Tables C-15-5,6,7,8. [Footnote 44: This reference is to Table C.5.2-2 in the Administrative Draft Plan, entitled "Difference and Percent Difference in Flows in the Sacramento River at Keswick, Year-Round." For reasons that are not explained, this Table has been removed from the public draft documents, and the Draft Plan and DEIS/DEIR fail to explain whether and how this discrepancy was resolved.] Some summertime and fall months in drier years are very different, which may be what is causing the biological models to show a negative egg survival response. The table below shows the results of month-to-month comparisons of flows out of Keswick for LLT (Late Long Term). It indicates that the ESO flows could be as much as 6500 cfs less than EBC2 flows (November) when months are evaluated individually, and not grouped by month and water year type."</p> <p>(NMFS 2013 Progress Assessment at 12.)</p> <p>The Plan and DEIS/DEIR often analyze averages when averages are not the proper tool for assessing impacts, however the inverse problem occurs with the use of physical model results in other models. If BDCP were to heed its own warnings about the proper use of these results, then it would only use averages and statistical representations of the model output as input to other models. Since averages are often not the proper tool for assessing impacts, this approach would leave biological models lacking input data. But the public BDCP documents appear to be scrubbed of non-averaged data, yet those detailed data were still used in biological models inappropriately. This results in documents that hide potential impacts from the public, and present overly-confident biological model results. A proper, more consistent and informative approach would be to allow use of detailed physical model results -- both in other models and the public documents -- on a case by case basis based on a detailed understanding of model accuracy and errors, and to prohibit use of potentially erroneous results on a case by case basis as well. This would maximize the value of the modeling and minimize the propagation of errors.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Appendix 5A Section C of the Draft BDCP EIR/EIS shows the full range of monthly average flows at 10% exceedance intervals. The biological effects of changes in the Sacramento River at Keswick flows under Alternative 4 compared to the No Action Alternative are evaluated in the Chapter 11, Fish and Aquatic Resources.</p> <p>As noted in Appendix 5A of the Draft BDCP EIR/EIS, many of the models and tools used relied upon on sub-monthly data (e.g. 6-hour meteorological inputs to the Sacramento River temperature model) in simulating the effects of monthly flow/storage changes on various physical and biological factors. Given that the CALSIM II operational modeling results that are fundamental to the analytical framework used were on a monthly timestep, as much as possible the presentation of the results were limited to a monthly timestep to minimize false certainty on a finer timescale. Therefore, in determining the impacts under various resource areas, available simulated model results were used on a monthly timestep in a comparative manner to determine relative effects, as much as possible. When deviated from the noted appropriate use, the results presented were sufficiently described on a case by case basis, as was the case in Chapter 8, Water Quality, of the Draft BDCP EIR/EIS, where daily averaged salinity results were used in assessing the D1641 water quality compliance.</p> <p>For more information regarding operational components of 4A please see Chapter 3 of the FEIR/EIS. For more information regarding water supply impacts please see Chapter 5 of the FEIR/EIS. For additional information on modeling, please see Master Response 30.</p>
1723	133	<p>BDCP fails to use a scientifically sound approach to setting biological objectives, identifying and evaluating stressors, and designing Conservation Measures.</p> <p>Our organizations [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] have been involved with the planning of BDCP's conservation strategy (Conservation Strategy) for several years. Throughout that time, we have emphasized the need for a planning and evaluation process and a project description that clearly articulate the project's goals and its specific biological outcomes (objectives) and that clearly links those targets to the factors that impair the ecosystem and</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, does not include conservation measures. Many of these original BDCP conservation measures may, however, be implemented through the California EcoRestore program. Please see Master Response 5 regarding BDCP Conservation Measures.</p>

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		<p>covered species in the Delta today (stressors). The Draft Plan should then describe extent that stressors must be ameliorated (stressor reduction targets) in order to achieve its objectives; this description of the problem sets the context for designing actions (conservation measures) that the Draft Plan will undertake to alleviate stressors. Finally, the intended outcomes (projected effects) of the individual Conservation Measures should be tabulated and explicitly compared to the Draft Plan's stressor reduction targets and, ultimately, its objectives, so that the public can clearly understand the need for and relationship among various Plan elements as well as the adequacy of and logic behind the Conservation Strategy. In numerous letters, memoranda, and meetings with all BDCP parties, we described the structure of this "Logic Chain" and the importance of such a transparent explanation of the Conservation Strategy both for (a) evaluation of the project proposal in the permitting phase (i.e. is the Plan sufficient to accomplish the needed ecosystem improvements?), and (b) the post-implementation, adaptive management phase (i.e. have Plan components produced the anticipated benefits or is there a need to adjust the suite of measures or their implementation?). [Footnote 45: See, e.g., Letter from The Bay Institute, Environmental Defense Fund, and Defenders of Wildlife to BDCP Steering Committee, December 20, 2009; Letter from American Rivers et al. to BDCP Steering Committee, November 3, 2010; Memorandum to J. Meral and D. Nawi from J. Cain et al. re: Necessary analytical steps for completing a successful BDCP Environmental Effects Analysis (EA) and NEPA/CEQA document, July 11, 2011; Memorandum to J. Meral et al. from TBI, EDF, and Contra Costa Water District re: Review of Appendices C and D, December 21, 2011; Memorandum to J. Meral from J. Rosenfield re: "Review of BDCP Effects Analysis Appendix G" December 22, 2011; Memorandum to J. Meral et al. from J. Rosenfield re: "Preliminary Review of BDCP Effects Analysis Appendix F", February 9, 2012.]</p>	
1723	134	<p>We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] have persistently encouraged BDCP to utilize criteria for viable populations (McElhany et al. 2000; Lindley et al. 2007) to identify and address important conservation needs and opportunities of the covered species. See, e.g., Letter from The Bay Institute, Environmental Defense Fund, and Defenders of Wildlife to BDCP Steering Committee December 20, 2009. This approach emphasizes that viable populations simultaneously display adequate levels of four key attributes of viability: abundance, productivity, spatial distribution, and life-history or genetic diversity. The essential nature of these attributes of viability is generally accepted throughout the conservation science literature. Meffe and Carrol 1994. We review the Draft Plan and DEIS/DEIR through this lens because, even though the attributes influence each other, actions in the Plan may impact species viability by altering one or more of these attributes, independent of effects on other attributes. The assessment of Plan impacts on covered species should address positive and negative effects to each attribute of viability. We briefly review the meaning of each of these attributes of viability here.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter offers the opinion that the analyses should evaluate effects based on population viability. The methods and significance criteria used for evaluation of effects on biological resources under the EIR/EIS are presented in Section 11.3.2 for Fish and Aquatic Resources and Section 12.3.2 for Terrestrial Biological Resources, which are the typical approaches to evaluating effects under NEPA and CEQA.</p>
1723	135	<p>Abundance: The number of organisms in a population is a common and obvious species conservation metric. For instance, endangered species recovery plans (USFWS 1996; NMFS 2014) and conservation programs such as the Anadromous Fish Restoration Program (AFRP) generally identify abundance targets against which conservation success may be measured. Populations or species with low abundance are less viable and at higher risk of extinction than large populations for reasons that include environmental variation, demographic stochasticity, genetic processes, and ecological interactions. Abundance is also correlated with and contributes to other viability characteristics including spatial extent, diversity, and productivity. In itself, however, simply increasing abundance of organisms (or any other</p>	<p>Please see response to comment 1723-134 regarding population viability.</p> <p>The Lead Agencies concur with the comment that species abundance, by itself, may not be a sufficient metric by which to measure species conservation. That is why in the 2013 public draft BDCP the biological goals and objectives for a particular covered species often use a variety of life history metrics. For example, biological objectives for winter-run Chinook salmon focus on population growth, survival rates, predation rates, migratory pathways, illegal harvest rates, passage delays, and physical aquatic habitat parameters. As described in Chapter 3 of the 2013 public draft BDCP, meeting a combination of these metrics and specific quantitative targets for these metrics is expected to provide a net benefit to the species and contribute to its recovery in the Plan Area. A similar approach is taken with many of the other covered</p>

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		single viability characteristic) is not sufficient to guarantee viability into the future.	species. Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.
1723	136	Productivity: The ability of populations to grow when conditions are suitable is essential to conservation success. Species or populations that display persistent negative population growth, as well as populations with limited ability to respond positively to favorable environmental conditions, are less viable and at higher risk of extinction. As we use them here, productivity parameters are expressed as rates (such as survival rate, offspring per adult female, etc.) and, refer to the ability of organisms to survive to reproduction and their reproductive success in the absence of density-dependent factors. Desirable population growth rates are commonly determined by identifying an abundance target and a date in the future by which that abundance should be attained; the population growth rate is then calculated as the minimum population growth needed to achieve the desired abundance in the available time frame. This approach does not always provide adequate productivity as it may result in population growth rates representing impaired productivity for a given species (for instance, if the abundance target could be achieved in less time by a more "healthy" population). While population growth rates vary, depending on environmental conditions, demographic conditions, and how abundance relates to local carrying capacity, species are often characterized as having "intrinsic" population growth rates that reflect their life history and demographic characteristics (age at first reproduction, fecundity, survival, and sex ratio). The reproductive success rates and life-stage specific survival rates observed under good conditions in the field, and in the absence of density-dependent limitations, are valid reference points for determining adequate productivity of managed populations.	See response to comment 1723-134 regarding population viability.
1723	137	Spatial Distribution: Maintaining or restoring spatial distribution of fish and wildlife species is a critical component of protecting these species and maintaining the public trust. The notion that spatial distribution is inversely proportional to extinction risk is axiomatic to modern conservation biology. MacArthur and Wilson 1967; Meffe and Carroll 1994; Laurance et al. 2002. Populations or species with limited or less varied geographic distributions are more vulnerable to catastrophic events, such as an episode of lethally elevated water temperature, disease, a toxic spill, drought, or other localized disturbances. The effect of geographic distribution on extinction risk is also apparent in the geographic attributes of extant freshwater fish species. Rosenfield 2002. Increased spatial distribution reduces susceptibility to localized catastrophes, predator aggregations, and disease outbreaks while simultaneously increasing the probability that at least some dispersing individuals will encounter habitat patches with favorable environmental conditions. The need to maintain adequate spatial distribution is regularly acknowledged in regulatory planning and decision-making regarding the Delta and its environs. See, e.g., NMFS 2014.	Please see response to comment 1723-134 regarding population viability.
1723	138	Life-History and Genetic Diversity: Natural diversity needs to be protected both within populations of specific public trust species and within the ecosystem as a whole. Natural diversity (life history patterns) allows organisms to adapt to and benefit from environmental variability. In addition, variability among individuals in a population increases the likelihood that at least some members of the population will survive and reproduce regardless of natural variability in the environment. Diversity across a population is especially important in highly variable ecosystems such as the Delta. Although only genetically based traits are subject to evolution and not all diversity is genetically-based, it is a trait itself (genetically based or not) that confers the ability to survive and reproduce in different environments. Thus, in a conservation sense, both genetically-based diversity and phenotypic diversity that	Please see response to comment 1723-134 regarding population viability.

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		<p>is a response to the environment (eco-phenotypic diversity) are important and must be conserved. Many of the native fish species in the San Francisco Estuary demonstrate high levels of life-history diversity that is believed to reflect the evolutionary history of success in environments that changed, unpredictably from year-to-year. Bennett 2005; Williams 2010; Rosenfield 2010; Miller et al. 2010. Thus, differential impacts to particular life history types (e.g. early migrants, late-spawning individuals, slow growing individuals, etc.) should be avoided to maintain viability of covered species.</p>	
1723	139	<p>In the logic chain planning framework, species-specific objectives are always expressed in terms of desired levels of these attributes of viability -- objectives define the parameters that reflect viability for each species concerned. Lower levels of the logic chain (e.g., stressors, stressor reduction targets, conservation measures) articulate hypotheses regarding how the conservation strategy may attain these desired levels of abundance, productivity, spatial distribution, and diversity. Even though the Draft Plan provides a description of the attributes of viability as applied to the covered species, Draft Plan at 5.2-26, it frequently confounds these basic metrics of desired outcome with "habitat" conditions it believes will produce improved viability. In so doing, it improperly substitutes a hypothetical means of achieving success (such as "habitat restoration") for a definition of success for conserving species in the Plan Area (SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound] targets for each attribute of viability) and that substitution changes the definition of success for conserving viable populations to providing specified quantities and qualities of "habitat." Furthermore, the Draft Plan generally fails to identify SMART objectives for covered species related to each of the four attributes of viability; when it does identify objectives reflecting the attributes of viability, the Draft Plan and the DEIS/DEIR fail to analyze the conservation strategy and operational alternatives in terms of their ability to attain these foundational targets.</p>	<p>Please see response to comment 1723-134 regarding population viability.</p> <p>As described in Chapter 3 of the 2013 public draft BDCP, the biological goals and objectives were developed to be responsive to the biological needs of the covered species. Biological objectives with metrics of habitat quantity, condition, or attributes are allowable and reasonable objectives with which to measure environmental conditions. In many cases, there are strong correlations between habitat conditions and species abundance or survival. It may not be feasible to measure species' response to conservation measures; in those cases habitat attributes serve as a useful surrogate for species metrics.</p>
1723	140	<p>As currently drafted, the BDCP repeatedly fails to adequately articulate or identify in a logical, transparent, and consistent manner the connection between its goals, objectives, stressors, stressor reduction targets, and Conservation Measures; in many cases, the explanation of one level of the Plan's logic chain contradicts the rationale provided for the level above or below it (Conservation Measures do not address presumed stressors, or stressor reduction targets are clearly inadequate to attain the Plan's stated objectives). Adequately described Plan objectives (those that would be useful in evaluating the draft Plan and in adaptively managing implementation of a final Plan) must be specific, measureable, achievable, relevant to a particular goal, and time-bound; most of the draft Plan's objectives do not include all of these essential elements. To the extent that objectives are adequately described, many of them are clearly inadequate to attain species-specific goals or the larger goal of ecosystem restoration. The DEIS/DEIR fails to rigorously evaluate many intended outcomes of the Conservation Strategy in even a qualitative fashion and many of the outcomes that are evaluated are not compared to the desired outcomes described in the biological goals and objectives or stressor reduction targets. Furthermore, the Plan overstates the benefits arising from the Conservation Strategy; the outcomes described in the DEIS/DEIR do not match those the Plan needs to attain, as described by its own biological goals and objectives (see Chapter 3 Conservation Strategy).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 5 regarding BDCP Conservation Measures.</p>
1723	141	<p>Numerous inadequacies and potential biases in the analyses of Conservation Measure outcomes are addressed below.</p> <p>The importance of, and functions served by, well-defined desired biological outcomes of the Plan (biological goals and objectives) are adequately described at the outset of the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The preferred alternative (4A) would include restoration but on a more limited scale in the form of Environmental Commitments. Please see Master Response 5 regarding BDCP Conservation Measures.</p>

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		<p>Conservation Strategy, which states:</p> <p>"Biological goals and objectives are the foundation of the Conservation Strategy and are intended to provide the following functions.</p> <ul style="list-style-type: none"> - Describe the desired biological outcomes of the conservation strategy and how those outcomes will contribute to the long-term conservation of covered species and their habitats. - Provide, where feasible, quantitative targets and timeframes for achieving the desired outcomes. - Serve as benchmarks by which to measure progress in achieving those outcomes across multiple temporal and spatial scales. - Provide metrics for the monitoring program that will evaluate the effectiveness of the Conservation Measures and, if necessary, provide a basis to adjust the Conservation Measures to achieve the desired outcomes." <p>(Draft Plan at 3.1-3.)</p> <p>In order for objectives to provide adequate guidance to project planners, decision-makers, and the public and, in order to realize the functions the Plan identifies for them, BDCP's objectives must be specific, measurable, attainable, relevant to the goal they describe, and time-bound ("SMART"). The requirements for SMART objectives are well-developed in the business planning literature, and BDCP purports to provide SMART objectives. See Draft Plan at 3.3-3. However, as we discuss, most of the objectives in the Plan do not meet the SMART criteria.</p> 	
1723	142	<p>The Conservation Strategy describes numerous biological goals and objectives (a welcome advance over previous versions of the Plan that we have reviewed); however most of the objectives fail to satisfy the intended functions of biological objectives described above. Many of the goals and objectives are not adequate to produce the level of benefits to ecosystem processes and covered-species that are required by an HCP/NCCP and most of the objectives are not adequately defined. Of equal concern, the Plan's approach (its Conservation Strategy) for attaining objectives largely or completely ignores certain key stressors that are believed to inhibit the ecosystem today and the Conservation Measures do not match with the stressors that are identified as driving ecological decline/preventing ecological restoration in the Project Area. Finally, analysis of outcomes anticipated to result from the Conservation Strategy (in both the Plan and DEIS/DEIR) are either not compared to the stated objectives and/or stressor reduction targets or demonstrate that the Plan will not attain its objectives and stressor reduction targets.</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.
1723	143	<p>Many of the biological goals and objectives are not legally adequate.</p> <p>Numerous objectives in the BDCP Conservation Strategy merely codify the status quo; in some cases, they allow for further deterioration of covered species' populations and ecosystem elements. As we have previously emphasized and discuss elsewhere in these comments, because the BDCP is intended to serve as the basis for regulatory compliance with the NCCPA, the Draft Plan must provide for the conservation and management of Covered Species within the Planning Area. For species that exist exclusively within the BDCP Plan Area, the BDCP must provide the measures necessary for the species' conservation</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.

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		<p>(recovery). For species that migrate through the BDCP Plan Area, BDCP must provide measures necessary for the species' conservation in the Plan Area. See Letter from Defenders of Wildlife, The Bay Institute, and Natural Resources Defense Council to Chuck Bonham dated July 10, 2013; see discussion supra in section I(A). Beyond simply mitigating impacts of the Plan, conservation measures must be drafted to deal with both covered activities' impacts and to achieve conservation of the covered species in the Plan Area. Because the NCCPA defines conservation with respect to species' status and biological needs, as opposed to simply analyzing and mitigating for the Plan's impacts on the covered species, a Plan's conservation measures must be designed to be consistent with what is necessary to "conserve" or recover a covered species and only activities "compatible" with conservation are permitted.</p>	
1723	144	<p>The biological objective for longfin smelt productivity is inadequate.</p> <p>One of the BDCP's objectives for longfin smelt (Objective LFSM1.1) states that BDCP will "Achieve longfin smelt population growth", such that "Future indices of annual recruitment are equal or exceed expected levels based on the 1980-2011 trend in recruitment relative to winter-spring flow conditions." Draft Plan at 3.3-120. The Conservation Strategy provides a specific definition of annual recruitment and explains that the objective will be met: "...if, after year 10, 50% (5 of each 10 consecutive years) or more of future indices..." reflect higher abundance than would be predicted based on the 1980-2011 relationship of longfin smelt abundance with Delta outflow. Draft Plan at 3.3-124.</p> <p>This objective is specific, measureable, and time-bound, however, the objective falls short of the biological outcome necessary to meet BDCP's legal requirements to restore longfin smelt; thus, it is not adequate to the goal of restoring this species.</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.
1723	145	<p>The objective improperly assumes that the Plan will do little to restore the species and predicts continued decline of longfin smelt.</p> <p>The "Global goal" for productivity of this species (i.e. the target that the Plan suggests would represent full recovery of species productivity) is defined as:</p> <p>"Achieve productivity (abundance indices) equal to or greater than predicted for 5 of 10 years based upon a regression of 1967 to 1987 abundance on December through May mean outflow (or X2)."</p> <p>(Draft Plan at 3.3-119 (emphasis added).)</p> <p>The Draft Plan's target of matching productivity to 1980-2011 period is much less than the global productivity goal as longfin smelt productivity per unit flow is well-known to have declined (probably more than once) during the 1980-2011 period. Kimmerer 2002; Rosenfield and Baxter 2007; Thomson et al. 2010. The productivity objective will not achieve the goal for this species; the USFWS Draft Recovery Plan target for longfin smelt recovery called for restoration of population dynamics (i.e. the mean and variance associated with both abundance and productivity) typical of the 1967-1984 period. USFWS 1996. This productivity objective for longfin smelt is, in fact, a codification of an inadequate and undesirable status quo for this species. In the period from 1980-2011, the longfin smelt population index should have exceeded its average (on a flow-corrected basis) in approximately 50% of years and it should have dropped below its average in approximately 50% of years-- that is the nature of a mathematical average; thus, all the Draft Plan's longfin smelt productivity objective requires is to match productivity that has occurred recently, not</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.

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		<p>the much higher productivities that occurred earlier in the historical data series. The Draft Plan's objective for longfin smelt productivity improperly defines success as maintaining the level of productivity that occurred after this species' productivity was severely compromised. Therefore, this objective does not satisfy one of the primary functions of defining biological objectives: to describe how the desired biological outcome of the conservation strategy will achieve the long-term conservation of covered species.</p>	
1723	146	<p>The biological objective ignores the importance of longfin smelt overall abundance to conserving this population; setting a productivity objective that is "flow corrected" effectively eliminates what the best available science indicates is a strong relationship between Delta outflow and longfin smelt abundance.</p> <p>The Plan must develop objectives for each attribute of viability, see McElhany et al. 2000, for each covered species and measure projected outcomes against these desired outcomes. The Draft Plan has no specific objective for longfin smelt abundance. Productivity is an important metric of viability, see id., but even an objective that defined an adequate level of productivity cannot substitute for other important attributes of viability, such as abundance. The attributes of viability are inter-related (e.g., sustained high productivity will produce higher abundance) but they are not redundant of each other. So although it is important that the Estuary's productivity is restored with respect to production of longfin smelt per unit of flow, that is a different measure from the (equally important) total abundance of longfin smelt.</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.
1723	147	<p>Though no abundance objective for longfin smelt is set by the Draft Plan, it does suggest an intent to maintain longfin smelt abundance at index levels that were common between 1990 and 2000. See Draft Plan at 3.3-124. This is clearly inadequate; longfin smelt abundance indices during this period were low enough to prompt filing of a petition to list longfin smelt as a federally endangered species (in 1993), and the species was ultimately listed under CESA in 2009 and the U.S. Fish and Wildlife Service determined in 2012 (responding to a petition filed in 2007) that listing of the species under the ESA was warranted but precluded. The average longfin smelt index in the first three years of the Draft Plan's target period (1990-1992 average: was less than one fifth of the average in the three years leading up to filing of the successful ESA petition for this population in 2007 (2004-2006 average: 756.3). Given that population abundance indices of longfin smelt reached lows during the 1990-2000 period that were a fraction of the levels observed when the population was eventually listed as a threatened species, the 1990-2000 period cannot represent a "recovery" for longfin smelt. The average longfin smelt index (as measured by CDFW's Fall Midwater Trawl) for the 1987-2011 time frame was 4,920 or approximately 30.4% of the 1967-1987 average (16,210) anticipated under the USFWS 1996 Draft Recovery Plan for this population.</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.
1723	148	<p>Implicit in the Draft Plan's wording of its productivity objective is that longfin smelt abundance in a given year is largely a function of ecological conditions related to freshwater flow rates (or X2 position) in the winter and spring. For decades, researchers have detected statistically significant relationships between freshwater flow and longfin smelt abundance; these relationships hold over orders in magnitude in both flow and indices of longfin smelt abundance. Stevens and Miller 1983; Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; Kimmerer et al. 2009; Mac Nally et al. 2010; Thomson et al. 2010. In addition, there are well-known relationships between various other stressors on the population and freshwater Delta outflow. See Rosenfield 2010 (e.g., pelagic food web productivity, entrainment, etc.). The productivity objective defines the expectation for abundance with</p>	Please see response to comment 1723-141 regarding BDCP Conservation Measures.

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		respect to flow; by "correcting" longfin smelt abundance for Delta outflow, this objective does not account for total abundance as a factor contributing to longfin smelt viability -- the objective focuses on changes in abundance due to anything except flow.	
1723	149	<p>Delta outflow is significantly affected and reduced by CVP/SWP operations in many years.</p> <p>In addition to its inadequate productivity objective, failure to set an abundance objective, and tepid expectations for abundance, the Draft Plan's longfin smelt productivity objective is also flawed because it ignores the effects of CVP/SWP operations on Delta outflow. Given that Delta outflow explains an extraordinarily large fraction of long-term variability in the longfin smelt population index and water management operations under the BDCP will differ from operations under the status quo (i.e., operations under BDCP affect actual Delta outflow relative to available runoff), the metric associated with this objective should be scaled to some measure of annual hydrology (e.g., unimpaired runoff) not to a measure of hydrology that will be modified by the operations in the Plan. As the Conservation Strategy notes, the CVP and SWP have a major effect on actual Delta outflow because those two projects control releases of water into the Delta and exports of water from the Delta. Therefore, because the metric employed by this productivity objective calibrates annual longfin smelt abundance to reflect whether it is above or below a value based on actual Delta outflow, BDCP operations that result in lower actual Delta outflow also simultaneously reduce the target value for longfin smelt abundance. As a result of setting a productivity objective that measures performance after removing the effect of flow, it is possible that if (when) the BDCP results in reduced Delta outflows (i.e. X2 moves upstream), then the productivity metric could be satisfied even as total abundance declines. Such an outcome is clearly at odds with restoring longfin smelt viability, yet the Plan clearly anticipates reductions in freshwater outflow during the December-May period (particularly over the longer term).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Lead Agencies will make the final decisions regarding the selection of an alternative (and therefore, an operational scenario) for the purposes of CEQA and NEPA. USFWS and NMFS have authority under the federal Endangered Species Act to determine whether the Proposed Project meets the regulatory standard of ESA Section 7, and CDFW, a CEQA responsible agency, has authority to determine if the Proposed Project meets the regulatory standards of CESA. Please see Chapter 3 of the EIR/EIS for additional information on Proposed Project operations.</p> <p>Please see Master Response 28 and 5 for more information regarding operational scenarios and compliance with ESA respectively. For more information regarding impacts to longfin smelt please see Chapter 11 of the FEIR/EIS.</p>
1723	150	<p>The Draft Plan's intent in choosing an objective of flow-corrected productivity is to remove the climatically driven part of the freshwater flow effect on longfin smelt recruitment:</p> <p>"The primary purpose of [the longfin smelt productivity] metric is to remove the climatically driven part of the freshwater flow effect on longfin smelt recruitment. This effect is best reflected in winter flows, because outflow during other seasons is more strongly influenced by the SWP/CVP operations. As described above, the correlation of the composite index with spring flow is nearly as strong as the correlation with winter flow, so the conceptual preference for basing the subobjective metric on the winter outflow regression equation is to some extent academic."</p> <p>(Draft Plan at 3.3-123 (emphasis added).)</p> <p>The choice to measure productivity against actual outflow (which is a product of human management and which will be influenced by the BDCP itself) rather than some measure of annual precipitation (e.g. full natural flow; runoff into the rim station reservoirs) wholly ignores the effect of SWP/CVP operations on Delta outflow. If BDCP results in greater exports of water during some years (an outcome that is expected), then actual Delta outflows will be lower than they are currently under analogous hydrological conditions; this would effectively "lower the bar" needed to satisfy the longfin smelt productivity objective because actual outflow forms the denominator of the metric envisioned in this objective. As currently constructed, the longfin smelt productivity metric would be informative about the efficacy of non-flow related conservation measures in restoring longfin smelt populations</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.</p>

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		<p>(because the influence of actual flow is effectively "removed" by the flow correction). But a metric that incorporates unmodified hydrology (e.g., full natural or unimpaired flow) during a given year is necessary to allow an apples-to-apples comparison among BDCP alternatives and performance of longfin smelt under the current water management regime because it would retain the very important effect of water operations under human control on longfin smelt abundance.</p>	
1723	151	<p>The objective improperly assumes only a small fraction of the responsibility for restoring longfin smelt productivity.</p> <p>The Plan's objectives must be based on the biological outcomes that are consistent with its legal requirements. By contrast, the Conservation Strategy explains that its rationale for benchmarking this longfin smelt objective to the 1987-2011 period was "...because this is the entire period for which all three individual survey indices [used in the metric for this objective] are currently available." Draft Plan at 3.3-120. It is impermissible to define Plan objectives by an arbitrary decision regarding data availability (i.e. adding in information from two shorter data series that are less suitable to understanding progress towards the objective). By allowing data availability (in this case, availability of less desirable data) to dictate the desired biological conditions that reflect recovery of longfin smelt, the Conservation Strategy sets on its head the logical progression from goals to objectives to stressor reduction targets to conservation measures to metrics used to evaluate efficacy and adaptively manage implementation of the Conservation Strategy.</p> <p>Similarly, the Plan fails to justify why the BDCP does not take full responsibility for improvements needed to attain the global objectives for longfin smelt. Although some longfin smelt live outside of the Plan Area for at least part of their life cycle, Rosenfield and Baxter 2007, the Draft Plan's rationale for relying on the unknown and perhaps non-existent potential for restoration actions outside the Plan Area to restore longfin smelt is unjustified by the current scientific information-base for longfin smelt. By assuming only a small fraction of responsibility for the total improvement in longfin smelt productivity (and by failing to set an adequate abundance objective) that will be required to restore longfin smelt (e.g., to levels described by the USFWS [U.S. Fish and Wildlife Services] 1996 Draft Recovery Plan for Delta fishes), the BDCP Conservation Strategy implicitly assumes that additional substantial restoration is possible (and will occur) for this species outside the Plan Area. By contrast, for Chinook salmon and steelhead, the Conservation Strategy is very specific in its allocation of conservation responsibility within the Delta (BDCP's responsibility) and outside of the Delta, see Draft Plan at 3.3-140 and Appendix 3.G; the Plan assumes that 50% of the needed improvement in Central Valley salmonid productivity will be occur within the Delta, by BDCP.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.</p>
1723	152	<p>The biological objective for improving longfin smelt productivity is far less than half of what is needed to restore this species, despite the facts that longfin smelt:</p> <ul style="list-style-type: none"> - Delta outflow (and X2) is persistently correlated with the vast amount of variation in longfin smelt abundance over the past 45 years of sampling. Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; Kimmerer et al. 2009; Thomson et al. 2010; Mac Nally et al. 2010; Rosenfield 2010; and, - Some fraction of the population may spend its entire life within the Plan Area and most or all of the population spends most of its life cycle in areas where ecological conditions are strongly affected by Delta outflow. Rosenfield and Baxter 2007; Rosenfield 2010. 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.</p>

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1723	153	<p>The Plan anticipates long term declines in longfin smelt abundance and productivity relative to the status quo and offers no description or expectation of additional restoration activities inside or outside the plan area that would lead to restoration of the species' abundance or productivity.</p> <p>Because the conservation standard implied by the longfin smelt productivity objective and the Draft Plan's expectations of future abundance are inappropriately low, the Conservation Strategy fails to incorporate Conservation Measures that are necessary (in either number or magnitude of effect) to adequately enhance the species' population. For example, longfin smelt populations are projected to decline from unacceptably low levels on average and under most of year types in alternatives 1-7 as evaluated in the DEIS/DEIR. See, e.g., DEIS/DEIR at Tables 11-1A-8, 11-2A-7, 11-3-7, 11-4-8, 11-5-8. It is difficult to imagine actions outside of the Plan Area that are available to federal and state trustee agencies, that could accomplish restoration of longfin smelt, much less the majority of the necessary restoration (the gap between the Plan's flow-corrected productivity standard and the flow-corrected productivity global objective or the gap between recent abundances and historical abundances that represent a healthy population) that the Plan apparently assumes will occur. The failure to identify actions inside or outside the Plan Area with a reasonable likelihood of significantly improving longfin smelt productivity or abundance is more egregious given that most of the water management scenarios considered in the DEIS/DEIR reduce winter-spring Delta outflows compared with the current baseline -- a Delta outflow baseline that state water and fish and wildlife management agencies consider to be inadequate for this species. See, e.g., California Department of Fish and Game (2010) at 94 ("Recent Delta flows are insufficient to support native Delta fishes in habitats that now exist in the Delta"); State Water Resources Control Board 2010 Flow Report at 5 ("Recent Delta flows are insufficient to support native Delta fishes in today's habitats").</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.
1723	154	<p>To the extent that the BDCP does rely on undescribed future actions when it assumes only a small fraction of the responsibility for restoration of longfin smelt, the Plan highlights additional problems with its description of this objective. This objective does not satisfy the Plan's need for objectives to serve as a "... benchmark [...] by which to measure progress in achieving [...] outcomes across multiple temporal and spatial scales"; nor does it provide a "... metric [...] for the monitoring program that will evaluate the effectiveness of the Conservation Measures and, if necessary, provide a basis to adjust the Conservation Measures to achieve the desired outcomes."</p> <p>See Draft Plan at 3.1-3. There is no way of differentiating the effects of BDCP actions from recovery actions taken outside the BDCP on longfin smelt's flow-corrected productivity (i.e. no way to distinguish progress towards the 1980-2011 productivity pattern from progress towards the higher global objective (population dynamics similar to those in the 1967-1984 period; USFWS 1995) for this species.</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.
1723	155	<p>The Plan sets an unacceptably long timeline for attaining its own inadequate targets for longfin smelt productivity.</p> <p>Finally, the time frame set for achieving the BDCP's productivity objective (20 years after implementation begins) is unacceptably long. Here, the timeline for attaining biological outcomes seems to be a product of the timeline for Conservation Measures identified in the Conservation Strategy. This is contrary to the purpose and function of setting Biological objectives; the timeline for Conservation Measures (and the mix of Conservation Strategy itself) should be designed to produce the desired biological outcome within a timeframe</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See response to comment 1723-149 regarding longfin smelt.

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		<p>that is appropriate for conservation needs. Even assuming the specified level of productivity for longfin smelt were acceptable (and it is not), it is indefensible to wait twenty years to produce this "improvement" in productivity, especially for a species that has declined as dramatically as longfin smelt. Waiting 20 years (10 generations of longfin smelt) before this sub-par level of productivity will be achieved condemns this species to linger indefinitely at population levels that merited its listing as an endangered species.</p>	
1723	156	<p>Biological objectives for delta smelt are inadequate.</p> <p>The entrainment objective is inadequate.</p> <p>One objective for delta smelt (objective DTSM1.2) states the Plan's intention to:</p> <p>"Limit entrainment mortality associated with operations of water facilities (i.e., CVP and SWP) in the south Delta to ≤5% of the delta smelt population, calculated as a 5-year running average of entrainment for subadults and adults in the fall and winter and their progeny in the spring and summer."</p> <p>(Draft Plan at 3.3-108.)</p> <p>Because the delta smelt geographic range is completely contained within the Plan Area, BDCP has responsibility for attaining global and BDCP objectives for this species—the two types of goals and objectives are one and the same for this species. The Global objective for this species regarding entrainment (Global objective 1.2) is to: "Maintain a cumulative entrainment of equal to or less than 5% per year across all life stages." Draft Plan at 3.3-107. By calculating the proportional entrainment of delta smelt as a 5-year running average, the Plan allows potentially devastating impacts to the population in any one year. This objective could be satisfied if 25% of the population were entrained in any one year, as long as entrainment was not detected in previous years. Thus the BDCP objective is not consistent with the Global objective for this species. By expressing the Objective only as a 5-yr running average (without also specifying annual limits), the objective is significantly weaker than the existing incidental take limit for this species, which prohibits take of adult delta smelt that would exceed 5% of the population in any year. See USFWS [U.S. Fish and Wildlife Service] 2008 Biological Opinion at 387.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Chapter 11 of this Final EIR/EIS.</p>
1723	157	<p>Delta smelt objectives are not adequately described to inform Plan development or adaptive management.</p> <p>Many of the Conservation Strategy's biological objectives are inadequately defined and, as a result, they cannot be of use in design of conservation measures, assessment of the Conservation Strategy as whole, or post-implementation performance evaluation of the Plan. Most of the objectives in the Plan do not meet the SMART criteria [specific, measurable, attainable, relevant to the goal they describe, and time-bound]. For example, no time-frame is given for attainment of the delta smelt entrainment objective, so this objective is not clearly defined and thus neither it, nor the actions designed to attain it, can be fairly evaluated. Another BDCP objective for delta smelt (objective DTSM1.1) is also inadequately defined to be of much use. The objective states:</p> <p>"Increase fecundity of delta smelt over baseline conditions as measured through field investigations and laboratory studies conducted through year 10 and refined through</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For information regarding adaptive management, please see Master Response 33.</p>

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		<p>adaptive management."</p> <p>(Draft Plan at 3.3-108.)</p> <p>Although the intent here is laudable, there is no indication of what it means to increase fecundity (how much is enough?). Also, the objective does not indicate by when the (undefined) target will be met (in other words, it is not time bound; we assume that the phrase "through year 10" refers to the period during which the baseline will be defined). As a result, this objective does not adequately describe the conservation standard for delta smelt, nor can it be used to assess whether the Plan's conservation measures are adequate to achieve that conservation standard. In essence, this statement regarding the Plan's intent to increase delta smelt fecundity is equivalent to having no intent to increase delta smelt fecundity.</p> <p>The final part of objective DTSM1.2 ("Assure that the proportional entrainment risk [to delta smelt] is evenly distributed over the adult migration and larval-juvenile rearing time periods") is ill-defined. There is no definition of evenly distributed entrainment risk and no indication of when this objective will be attained. These are crucial omissions as the objective's intent (to protect life history diversity of delta smelt by preventing repeated and disproportionate impacts to certain segments of the species' temporal distribution) is essential for conservation and restoration of this species. See Bennett 2005. As a result, this objective cannot be used to assess the adequacy of conservation measures (pre-implementation) or to measure the Plan's efficacy in restoring endangered species (post-implementation). This is a common problem for the objectives in the Draft Plan as the Effects Analysis (Draft Plan Chapter 5) acknowledges that this and similar (and equally important) BDCP objectives are not adequately described; for instance, in describing why the Plan's likelihood of attainment is not evaluated for objectives intended to protect life history diversity (timing of migration) within Chinook salmon runs (WRCS3.2, SRCS3.2, FRCS3.2, STHD3.2), the Effects Analysis states: "The biological objective requires further refinement in order to establish the metrics by which it could be assessed." Draft Plan at 5.2.-41. [Footnote 46: Notwithstanding these limitations, as we discuss below, available scientific information indicates that the Draft Plan is unlikely to achieve many of the draft biological objectives.]</p> <p>It is possible for the Draft Plan to describe these important objectives to limit life history impacts in measureable terms. For example, BDCP could set limits on delta smelt entrainment and salmonid mortality during migration that occur on a smaller time-step, within the limits already described in other objectives, so that all of the allowable entrainment/mortality does not impact one particular life history variant (early vs. late spawners/migrants, smaller vs. larger spawners/migrants, etc.) disproportionately. Attaining the clear intentions of delta smelt objective DTSM1.2 (to reduce total entrainment mortality and to reduce the entrainment impact in any given time period) would require a set of objectives that are tiered over different time scales. Setting an annual limit (not averaged over 5 years) on entrainment at 5% of the delta smelt population makes sense; if entrainment is approaching 5% within any given year, corrective actions (that should be specified in the Plan), would be required. But, protection of life-history diversity within the delta smelt population calls for a limit on entrainment at shorter time steps. Delta smelt salvage is generally recorded within the 6 month (26 week) period from mid-December through mid-June; thus, allowing for a maximum of 0.5% of the population to be entrained in any two-week period would complement the annual limit, while also providing protection for temporally, defined segments of the population within a year. Similarly, a time-step</p>	

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		greater than 1 year could be applied to prevent repeated occurrence of maximum annual entrainment limits--5% entrainment every year is not desirable and may lead to jeopardy for delta smelt. For example, a threshold of 3% entrainment as a 5-year running average would be consistent with the other temporally-defined entrainment objectives described here, while increasing protection for the species.	
1723	158	<p>Biological objectives for sturgeon are inadequate.</p> <p>Objectives are not adequately described to inform plan development or adaptive management.</p> <p>Objectives for green and white sturgeon are too poorly defined to provide guidance regarding necessary or effective management actions or regarding the success or failure of any actions that are taken under the BDCP. For example, one green sturgeon objective (GRST1.1) is to:</p> <p>"Increase juvenile green sturgeon survival (as a proxy for juvenile abundance and population productivity) throughout the BDCP permit term and increase adult green sturgeon survival (as a proxy for adult abundance and productivity) by year 15."</p> <p>(Draft Plan at 3.3-190.)</p> <p>An analogous objective exists for white sturgeon. We agree that juvenile survival of green sturgeon must be improved to conserve these two Central Valley fish species. Israel and Klimley 2008; Israel et al. 2008. However, the BDCP objective is not specific enough to be actionable or enforceable: What does "increase" mean? How much improvement is enough? At what level of survival should the Plan's efforts be declared a success?</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For information regarding adaptive management, please see Master Response 33.</p>
1723	159	<p>The Effects Analysis acknowledges:</p> <p>"Current spawning-to-adult abundance is unknown, so evaluating an increase as a result of the BDCP is not currently feasible. The capacity to meet this objective will be a topic of the adaptive management program."</p> <p>(Draft Plan at 5.2-46.)</p> <p>National Marine Fisheries Service (NMFS) previously commented on the inadequacy of Draft Plan objectives for sturgeon species, writing: "The biological objectives for sturgeon abundance and productivity (under GRST1) are vague and rely too much on "documenting the current distribution" and future studies." NMFS 2013 Progress Assessment at 15.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding impact analysis for sturgeon see impacts AQUA-127 through AQUA-158, Chapter 11 of this Final EIR/EIS. The proposed project would not result in significant impacts to either sturgeon species.</p>
1723	160	<p>There are numerous ways to set meaningful conservation objectives for sturgeon survival despite a perceived lack of desired information. If current survival rates for these two species in the Central Valley are unknown, the Plan could set objectives that are tied to survival estimates in river systems where sturgeon populations are relatively stable or increasing. Alternatively, the Plan could have set survival objectives for sturgeon that are consistent with population growth, given survival estimates from other stages of these species' life cycles (as it does for salmonid survival objectives). If that information is not available or adequate, the Plan could have set an objective regarding biological parameters that are closely related to survival rates (e.g. growth rate, condition factor, hatching success, etc.). By establishing an objective as an unspecified improvement over an unknown value, the BDCP limits its ability to develop a Conservation Strategy that is adequate to produce</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding impact analysis for sturgeon see impacts AQUA-127 through AQUA-158, Chapter 11 of this Final EIR/EIS. The proposed project would not result in significant impacts to either sturgeon species.</p> <p>For information regarding adaptive management, please see Master Response 33.</p>

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		<p>desired biological outcomes or to evaluate that strategy (e.g. in the Effects Analysis). Moreover, the Draft Plan's claim that this will be a topic of Adaptive Management discussions is feeble. Adaptive management is an approach that allows managers to adjust the strategy for attaining desired outcomes (for example, under what circumstances would the Plan allocate more or less effort to certain Conservation Measures to adaptively manage towards an objective?); adaptive management is not a technique that allows one to determine what the desired outcome is for the Plan. The Draft Plan habitually an incorrectly relegates to "adaptive management" any decision that is inconvenient to make now -- these are simply failure to plan that will lead to paralysis of adaptive management in the future.</p> <p>As currently developed, the BDCP does not set a target for sturgeon survival that is consistent with conservation of these species. By failing to identify any measure of current sturgeon survival against which an improvement can be measured, the Plan calls into question whether it has an adequate grasp of the conservation challenges facing these or other species. It is not acceptable to permit a Plan with objectives for covered species survival rates that only lead to extinction at a slightly later date than without the Plan.</p>	
1723	161	<p>Biological objectives for through-Delta salmon survival are inadequate.</p> <p>The Plan describes through-Delta survival objectives for Central Valley steelhead and each temporally-defined run of Central Valley Chinook salmon and separate objectives for fall-run Chinook originating from the San Joaquin River Valley and those originating from the Sacramento River Valley. These targets were calculated by estimating the total increase in survival, throughout each population's life-cycle, necessary to attain certain Cohort Replacement Rates (CRR: the quotient of a given generations abundance divided by the abundance of the generation that produced it) that are assumed to contribute significantly to recovery. Half (50%) of the total needed improvement in survival was allocated to improvements in through-Delta survival that would be entirely the responsibility of the BDCP; the other half of the improvement in steelhead and Chinook salmon survival would be accomplished by non-BDCP actions that occur outside of the Plan Area.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For information regarding adaptive management, please see Master Response 33.</p>
1723	162	<p>The objectives are inadequate as the timeframes for achieving the biological objectives are arbitrary and too long to generate any reasonable expectation of recovery.</p> <p>Although we applaud the transparency and detail of the methodology presented in the technical appendix, Draft Plan Appendix 3G (Proposed Interim Salmonid Delta Survival objectives), some of the assumptions embedded in this approach lead to through-Delta survival targets that are insufficient to support recovery of these salmon populations. For example, the technical appendix describes its approach to incremental improvement in steelhead and Chinook salmon cohort replacement rates and survival as follows:</p> <p>"Using average fish generations (3-years) as the unit of time, we identified intermediate time steps at BDCP Year-19 (three generations past dual conveyance) and a Cohort Replacement Rate (CRR) target of 1.2; another intermediate time step at Year-28 (another three generations) and a CRR target of 1.3; and a final time step at Year-40 (four more generations) and a CRR target of 1.4, for spring-run, fall-run, and late fall-run Chinook salmon and steelhead. CRR targets of 1.3, 1.4, and 1.5 at the same respective time steps were used for winter-run Chinook salmon based on recognition of their endangered status. These CRR targets were selected to put the covered salmonids on a population growth trajectory to achieve the previously published BDCP global goals (BDCP 2012) identified in Table 4."</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding the proposed project (4A) impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS.</p>

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		<p>(Draft Plan, Appendix 3G at 7.)</p> <p>Table 4 in this Appendix reveals that the desired CRR's were chosen in order to attain global goals of population abundance sometime in the 40-50 year, post-implementation time frame. Id. At 21. The global goals used here for population abundance are lower than those expected under the Anadromous Fish Restoration Program (AFRP) of the Central Valley Improvement Act (CVPIA) in some cases (such as winter-run Chinook salmon). Attainment of the AFRP's targets for salmonid abundance is already long overdue pursuant to both state and federal law. See P.L. 102-575, [Section] 3406(b)(1); Cal. Fish and Game Code [Section] 6902. There is no justification for planning to not attain the AFRP targets or to attain them only after waiting for an additional 40 years or more, given the ability to make additional efforts to achieve these targets.</p>	
1723	163	<p>The National Marine Fisheries Service targets for cohort replacement rates (CRRs) (and the Delta survival estimates they derive from these CRR's) are abnormally low for a recovering Chinook salmon population. In fact Table 4 of the technical appendix shows that populations of all salmonids are expected to drop initially from current levels, because current survival rates are so low, and remain below these starting levels for over 20 years. As modeled in the Appendix, the Draft Plan anticipates extirpation of all San Joaquin salmonid populations (fall-run Chinook salmon, spring-run Chinook salmon, and steelhead) within the first 10 years of the BDCP (though they are artificially resurrected in year 10 to allow continued modeling). Application of the methodology provided in Appendix 3.G for calculating salmonid survival objectives will lead the BDCP to accept worse conditions for San Joaquin River fall-run Chinook, spring-run Chinook, and steelhead -- including possible extinction in the next decade. Even if conditions do improve in the future under BDCP, allowing a prolonged decline in populations of covered species in the "short term" greatly increases their risk of extirpation and is inconsistent with the BDCP's purposes and authorizing legislation.</p> <p>Although such low population growth rates might be acceptable as an average over a long time-period, there is no justification for targeting recovery of Central Valley salmonids over 40 years, or 13 generations, in the future. Normal Chinook salmon and steelhead populations have the intrinsic (and demonstrated) potential to grow from current levels to the desired abundance targets (the overarching goals for abundance in the Central Valley, identified in Table 4 of the Appendix) in less than 4 generations. [Footnote 47: From a biological perspective, Cohort Replacement Rates (CRR) of 1.2 to 1.4 represent anemic growth in populations of Pacific salmon. If we assume that males are as abundant as females in a spawning cohort, we can use Quinn's (2005) findings from numerous populations to estimate Cohort Replacement Rates of Chinook salmon. This procedure produces CRR's that range from ~>3-9 for Chinook salmon and from ~4.6-13.0 for steelhead. We have clarified with that author that the freshwater and ocean survival rates used to calculate the CRR's were derived from a numerous populations of each species and none of those populations would be considered "pristine" or unimpacted by human activity. Quinn 2014 personal communication. Other authors studying multiple Chinook salmon populations have found similarly high freshwater survival rates. Healey 1991; Bradford 1995.]</p>	Please see response to comment 1723-162 regarding salmon Conservation Measures for the BDCP.
1723	164	The assumption that a species' recovery timeline is tied to the expected implementation of a particular conservation measure is improper and arbitrary. Whereas, objectives must be attainable (the "A" in a SMART objective [specific, measurable, attainable, relevant to the goal they describe, and time-bound]) this does not mean that the timing of that particular	Please see response to comment 1723-162 regarding salmon Conservation Measures for the BDCP.

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		<p>conservation measure should drive the timing of the desired outcome. Such an approach represents a failure to consider conservation actions not included in the Conservation Strategy or expediting timelines for conservation actions that are included in the Conservation Strategy in a way that would lead to attainment of biological outcomes in a desirable time-frame. Again, objectives (and the time bounds for attaining these desired outcomes) should drive development of the Draft Plan, not the other way around. The Draft Plan's failure to first determine conservation needs of covered species, and then design a Conservation Strategy to meet those needs leads to troubling outcomes. For example, the first target for improvement in salmonid survival is at year 19 of the Plan; this interval was chosen because it is ~3 Chinook salmon generations after the expected implementation of the dual conveyance in year 10. Draft Plan, Appendix 3G at 10. Thus, the Draft Plan uses the conservation measure to set the objective, rather than setting an objective and devising a Conservation Strategy to attain that objective. In tying the objectives' time frame to completion of the new conveyance, the Plan exposes each of the 5 covered salmonid populations to grave risk if completion of the dual conveyance is delayed. Indeed, the Plan and technical appendix assume that Central Valley salmonids will continue to decline in the first 10 years of the Plan. Id. at 20.</p>	
1723	165	<p>Accelerating the improvement in attainment of desired salmonid survival rates would not require a potentially infeasible construction schedule for the dual conveyance element of the BDCP (Conservation Measure 1). There are other measures available (e.g., increased Delta through-flow, reduced export pumping in the south Delta, Yolo Bypass restoration) for which there is strong scientific evidence that they are likely to improve salmonid survival through the Delta, and other actions that the Plan asserts can improve survival (such as targeted predator removal) that could be implemented more aggressively until the dual conveyance is operational. Also, the technical appendix does not explain why it would take 9 years (approximately 3 Chinook salmon generations) to attain desired interim survival levels after dual conveyance operations begin. Survival through the Delta in one year is not in any way affected by survival in previous years--it is not a cumulative effect. If the dual conveyance is, as the technical appendix assumes, the key to improved through-Delta survival for Central Valley salmonids, then the benefits of such a conveyance ought to accrue immediately upon completion and operation of the new diversion facility (e.g., year 10).</p>	<p>Please see response to comment 1723-162 regarding salmon Conservation Measures for the BDCP.</p>
1723	166	<p>The survival objectives for San Joaquin Basin salmonids are flawed because the methodology for determining survival objectives produces inconsistent targets for Chinook salmon entering the Delta from the San Joaquin and Sacramento Rivers at the same time of year.</p> <p>Although the methodology for calculating necessary improvements for salmonid through-Delta survival is the same for all populations considered, the methodology produces inconsistent outcomes that reflect an inadequate Conservation Strategy. For example, because overall survival rates differ between Sacramento and San Joaquin populations of fall-run Chinook salmon (San Joaquin survival being much lower), the methodology for calculating necessary improvement in through-Delta survival produces lower future survival for San Joaquin fall-run Chinook salmon than it does for fall-run emanating from the Sacramento River. The objective states:</p> <p>"Objective FRCS1.1: For fall-run Chinook salmon originating in the San Joaquin River and its tributaries, achieve a 5-year geometric mean interim through-Delta survival objective of 27% by year 19 (from an estimated 5%), 29% by year 28, and 31% by year 40, measured</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding the proposed project (4A) impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS.</p>

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		<p>between Mossdale and Chipps Island. For fall-run Chinook salmon originating in the Sacramento River and its tributaries, achieve a 5-year geometric mean interim through-Delta survival objective of 42% by year 19 (from an estimated 40%), 44% by year 28, and 46% by year 40, measured between Knights Landing and Chipps Island. ..."</p> <p>(Draft Plan at 3.3-158 (emphasis added).)</p> <p>The Draft Plan simply adopts these two different targets without offering any rationale as to why juveniles of the same sub-species, that enter the Delta at approximately the same size and in the same season, would experience such radically different survival rates. While BDCP is required to achieve conservation in the Plan Area for salmon (not recovery per se, but measures in the Delta that are sufficient to achieve recovery in combination with actions outside of the Plan Area) the proposed objectives lock in the current disparity between north and south delta habitat suitability (which results in lower survival for salmon and other species) for which CVP/SWP operations play a major role. This outcome is inconsistent with global and BDCP objectives that seek to increase spatial distribution of covered species by restoring populations that spawn or rear in the southern Delta and San Joaquin Valley. Objectives for San Joaquin salmon survival need to be strengthened and revised to ensure they are compatible with existing legal obligations.</p>	
1723	167	<p>Objectives for community and ecosystem conservation are inadequate.</p> <p>The Conservation Strategy identifies numerous landscape scale objectives (related to a reserve system, ecological process, increased fish and wildlife movement, and increased habitat suitability for covered species) as well as well as for numerous natural communities [e.g., tidal mudflat, tidal brackish emergent, tidal perennial aquatic, vernal pool complex, etc.]. Inclusion and attainment of such broad scale objectives for the Draft Plan are essential to ensure that the Draft Plan achieves the requirements of the NCCPA [Natural Community Conservation Planning Act]. See Fish and Game Code [Sections] 2820(a)(3), (4).</p> <p>Objectives are not adequately described to inform plan development or adaptive management.</p> <p>Unfortunately, none of the community and ecosystem conservation objectives identified are sufficiently well-defined to serve the functions of SMART objectives [specific, measurable, attainable, relevant to the goal they describe, and time-bound]. Without this level of specificity, it is impossible to know whether the objectives are sufficient to the larger goals and legal requirements of an HCP/NCCP and it is not possible to judge whether the actions specified in the conservation strategy will produce the necessary level of benefit. For example, while goal is an excellent aspiration for the BDCP, there is no way to know whether the associated objectives will allow the Draft Plan to attain it. Goal L1 reads:</p> <p>"A reserve system with representative natural and seminatural landscapes consisting of a mosaic of natural communities that is adaptable to changing conditions to sustain populations of covered species and maintain or increase native biodiversity."</p> <p>(Draft Plan at 3.3-35.)</p> <p>None of the objectives associated with this goal are time-bound--there is no way to tell whether the goal will be satisfied early or late in the Plan's permit term (if at all). While the objectives are somewhat specific regarding acreage to be restored, there is little specificity regarding the desired final condition or location of these acres. For example, objective L1.6</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p>

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		<p>("Increase the size and connectivity of the reserve system by acquiring lands adjacent to and between existing conservation lands") does not define what is meant by "increased size" and "connectivity"--how will we know when or if this target is attained? Also, this objective's call for increased biological connectivity is simplistic, as not all connectivity is desirable; in this particular ecosystem, connectivity has resulted in the damaging spread of invasive predators and competitors and ecosystem architects such as clams and Egeria. Clearly, objectives like L1.4 ("Include a variety of environmental gradients (e.g., hydrology, elevation, soils, slope, and aspect) within and across a diversity of protected and restored natural communities") are far too vague to meet the Plan's stated purpose for objectives, which are to serve as "the foundation of the conservation strategy" and to provide descriptions of: desired biological outcomes; how those outcomes will contribute to the long-term conservation of covered species and their habitats; benchmarks by which to measure progress in achieving those outcomes across multiple temporal and spatial scales; metrics for the monitoring program that will evaluate the effectiveness of the conservation measures. Draft Plan at 3.1-3. There is no imaginable circumstance where such a general statement could provide a basis to adjust the conservation measures to achieve the desired outcomes.</p> <p>Similarly, the objectives associated with goal L.2 ("Ecological processes and conditions that sustain and reestablish natural communities and native species," Draft Plan at 3.3-40) do not provide guidance on critical questions like "how much?", "where?" and "by when?"--the answers to these questions are essential for objectives to perform the functions identified for them by the Plan; as a result, these objectives are merely sweeping statements that do not allow planners, permit-granting agencies, or the general public to understand the intent of the Draft Plan or analyze whether the conservation strategy is likely to accomplish these ends (and by when).</p>	
1723	168	<p>The Draft Plan and DEIS/DEIR fail to evaluate biological outcomes against biological goals and objectives.</p> <p>The Draft Plan and DEIR/DEIS fails in most cases to measure projected outcomes of the Conservation Strategy and water operations against the desired biological outcomes described in the objectives. The first recommendation of the Delta Science Program Independent Review Panel (2014) was that the "Analysis of biological effects needs more consistency and specificity." DSP Independent Science Review Panel Report 2014 at 12. Commenting on the Draft Plan's own evaluation of its ability to evaluate the Conservation Strategy's biological objectives that review panel wrote:</p> <p>"Approximately 72% of the objectives for covered fish could not be fully evaluated at this time due to insufficient information. The overall net effects conclusion for each species seemed to be based on the judgment of the authors, rather than a systematic ranking of attribute importance, change in response to the BDCP, and uncertainty in the rankings ... A systematic approach for synthesizing the net effect on each Covered Species was not used even though a ranking system was described that could have been used as a semi-quantitative scoring approach. Instead, professional judgment was used to assess the overall net effect."</p> <p>(DSP Independent Science Review Panel Report 2014 at 22.)</p> <p>The failure to generate expected outcomes in terms that would be comparable to the objectives is not solely due to technical challenges or lack of modeling capacity. For example, the expected outcomes for delta smelt entrainment under different alternatives</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p>

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		<p>(see Figures 11-1A-1, 11-1A-2, 11-2A-1, 11-2A-2, 11-3-1, 11-3-2, 11-4-1, 11-4-2, 11-5-1, 11-5-2, 11-7-1, 11-7-2, 11-8-1, 11-8-2) are reported in the same terms as objective DTSM1.2 (e.g. the mean proportion of the adult and larval/juvenile population, respectively, lost to entrainment-related mortality each year). These analyses clearly demonstrate that alternatives 1 through 5, at least, are not projected to attain the relevant biological objective for delta smelt in most year types (making it extremely unlikely that any of these alternatives would meet the 5 year running average target). Despite having produced the relevant analysis, the DEIS/DEIR fails to connect the dots between the biological objectives that were supposed to have driven development and review of alternatives and operations, and the projected outcomes of those alternatives and operations so that readers could understand which of the alternatives studied offered the best chance of meeting the stated objective.</p> <p>This same failure to compare projected outcomes to desired outcomes occurs throughout the DEIS/DEIR. For each Alternative studied, Chapter 11 provides a table entitled, "Estimated Differences Between Scenarios for Longfin Smelt Relative Abundance in the Fall Midwater Trawl or Bay Otter Trawl." See, e.g., DEIS/DEIR at 11-2492 (Table 11-8-7). These tables clearly display that longfin smelt populations are expected to decline as compared to current conditions in most year types of each Alternative studied, except for Alternative 8. Id. Objective LFSM1.1 declares that the Plan's intention is to increase population productivity (relative to freshwater flow) compared to current conditions. The comparison between expected and desired outcomes show that most (and perhaps all) of the alternatives studied are inadequate to achieve the Plan's own conservation standards.</p> <p>The failure to compare expected outcomes in the DEIS/DEIR to the biological objectives set in the Plan's Conservation Strategy undermines the purposes for setting biological objectives in the first place (as described in the Draft Plan at 3.1-3). Development of the Conservation Strategy must be guided by specific, measurable, achievable, relevant, and time bound targets to allow evaluation of the relative benefits of Conservation Measures and suites of Conservation Measures in achieving those targets. Because the Effects Analysis does not describe expected outcomes that can be compared to the Plan's objectives, there is no way to know whether the Conservation Strategy is adequate and there is no way to compare the relative merits of different alternative Conservation Strategies and their interactions with different operational regimes.</p>	
1723	169	<p>The Draft Plan and DEIS/DEIR fail to accurately identify, prioritize, or analyze key stressors that will be addressed to assure attainment of desired outcomes (objectives), and as a result the Draft Plan and DEIS/DEIR overemphasizes the benefits of certain actions and underestimates the adverse impacts.</p> <p>In order for the BDCP to realize the objectives and goals it defines (much less those that are required to actually accomplish its legal responsibilities), it is vital for the Plan to accurately characterize what forces prevent attainment of desired biological outcomes currently ("stressors") and the level of stressor reduction needed to promote attainment of the objectives. Obviously, focusing on unimportant or less important stressors will lead to inefficient, slow, and perhaps incomplete attainment of biological objectives. Development and prioritization of specific conservation actions is premature until there is adequate description of the Plan's objectives and a science-based assessment and ranking of the key stressors that prohibit attainment of the objectives.</p> <p>The Plan's description of stressors is ad-hoc, incomplete, internally inconsistent, and its</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23. Please refer to Master Response 14 for information regarding Microcystis.</p>

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		<p>justification of stressor reduction lacks scientific rigor. For example, Appendix 5F (Biological stressors on Covered Fish) opens by declaring: "Biological stresses can result from competition, herbivory, predation, parasitism, toxins, and disease." Draft Plan, Appendix 5F at 5.F-i. Stressors such as habitat loss or direct export-related mortality (salvage) by SWP and CVP export operations receive almost no attention in this Appendix -- curious given that the Conservation Strategy's focuses on restoring habitat and attempting to significantly reduce export-related mortality. Furthermore, this Appendix pays no attention to the driving effect of reductions in freshwater flow into, through, and out of the Delta on most of the stressors affecting covered fish species dynamics; this is a major and grave omission because freshwater flow reductions are widely acknowledged to be one of the most important stressors for numerous native species in this ecosystem. See, e.g., SWRCB 2010 Flow Report; CDFW 2010. Ineffective and inefficient migration of aquatic species is one of the many effects of altered/reduced freshwater flows; although the Plan identifies these effects as key stressors for certain covered species, they are not analyzed or compared to other stressors in this Appendix on the biological stressors to covered fishes. Instead, the Appendix focuses exclusively on four "key biological stressors:" invasive aquatic vegetation, predation, invasive mollusks, and Microcystis. Draft Plan, Appendix 5F at 5.F-i.</p>	
1723	170	<p>The Draft Plan uses inconsistent and scientifically unsupported estimations of the relative importance of stressors.</p> <p>Both the Draft Plan and DEIS/DEIR are internally inconsistent regarding the estimation of the relative or absolute importance of stressors. The documents frequently fail to provide any support for their assertion that certain stressors are actually limiting population viability or ecosystem productivity. In many cases, the Draft Plan and DEIS/DEIR documents ignore evidence of stressor importance, even when those documents acknowledge the existence of the stressor.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on stressors see Master Response 23.</p>
1723	171	<p>The Draft Plan and DEIS/DEIR are internally inconsistent and fail to use the best available science regarding the importance of entrainment as a stressor.</p> <p>The problem is particularly vexing with regard to known stressors such as entrainment. Despite the best available science demonstrating that entrainment-related mortality can be a significant stressor on many covered species, both the Draft Plan and the DEIR/DEIS fail to accurately acknowledge this. Instead, they maintain that current entrainment rates have only minor effects on covered species. In part, this erroneous conclusion stems from a persistent focus on "average" (mean) entrainment across years in the Draft Plan and DEIS/DEIR. The mean is an inappropriate and misleading metric because (a) covered species do not experience persistent "average" conditions, they experience individual years with either high entrainment or low entrainment, and (b) the impact of entrainment mortality is believed to vary substantially with different annual (or seasonal) environmental conditions; thus, entrainment impacts (and many other kinds of negative impacts) to covered species are periodically (not continually) severe. See, e.g., Kimmerer 2008; Kimmerer 2011; Rosenfield 2010. Both the Draft Plan and DEIS/DEIR repeatedly underplay the importance of current entrainment levels. But the Draft Plan identifies entrainment-related mortality as a stress for each of the aquatic covered species and both the Draft Plan and DEIS/DEIR commit considerable space to analysis of both the reduction of this stressor that will presumably arise from moving the point of water diversion (Conservation Measure #1; CM1) and the "operational flexibility" that will be gained from CM1. By emphasizing that current entrainment rates are not a significant stressor on covered species, the Draft Plan demonstrates that construction and operation of its primary conservation measure (adding</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The current effects of entrainment are considerably less than those that have occurred historically, as a result of measure such as those implemented under the USFWS (2008) BiOp. The draft BDCP and EIR/S characterization of entrainment as a stressor take this information into account, while discussing the available studies linking entrainment to population dynamics. See, for example, the discussion for delta smelt in Section 5.5.1.1.3 Reduced Entrainment in the draft BDCP. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p>

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		<p>an additional point of diversion; CM1) will have minimal environmental benefits and that the environmental impacts from operation of CM1 are likely to worsen conditions for salmon and other covered species.</p>	
1723	172	<p>Entrainment-related mortality has been studied more intensively than most, if not all, of these other stressors. While the precise impact of this stressor, in terms of its incremental contribution to extinction risk, is unknown (and perhaps, unknowable), species-specific, and varies with regard to year-type and population status; the relative impact of this stressor on covered fish species and ecosystem productivity is well established. For example, Kimmerer 2008 found direct entrainment-related mortality of winter-run Chinook salmon to be approximately 10% of the juvenile winter-run population, on average, at the highest export flows recorded and that these were "higher than expected based on management targets for the Delta"; he further cautioned that indirect, entrainment-related mortality could be high as well and he concluded:</p> <p>"From a population maintenance standpoint, the calculated loss rate at the export facilities would be a significant component of direct anthropogenic mortality."</p> <p>(Kimmerer 2008 at 24.)</p> <p>With regard to delta smelt, numerous studies that have estimated the relative effect of putative stressors on this population found that entrainment-related mortality was one of the more important stressors. Kimmerer 2008, 2011; Mac Nally 2010; Thomson 2010; Maunder and Deriso 2011; Rose et al. 2013a,b. [Footnote 48: The Plan and DEIS/DEIR documents incorrectly assert that Maunder and Deriso 2011 did not find evidence of adult entrainment impacts on the delta smelt population. Maunder and Deriso's results clearly identify adult delta smelt entrainment as an important impact to delta smelt abundance, though their interpretation of this result downplays its importance for reasons that are not clear. In fact, Rose et al. (2013b) recently argued that Maunder and Deriso's interpretation of their own analyses improperly downplayed the magnitude of the entrainment-related mortality impact.]</p> <p>It is simply not credible for the Plan and DEIS/DEIR to suggest that the impacts of south Delta export operations on the BDCP's covered aquatic species might be small. In addition to the quantitative analyses of entrainment-related mortality described above, the California Department of Fish and Wildlife's life history conceptual models for Chinook salmon (Williams 2010), delta smelt (Nobriga and Herbold 2009), white sturgeon (Israel et. al. 2009), and longfin smelt (Rosenfield 2010) conclude that mortality arising from CVP and SWP water export operations in the south Delta are one of the more important stressors on covered species. In addition to these syntheses of scientific information on entrainment-related impacts to covered species, the USFWS 2008 and NMFS 2009 Biological Opinions identify entrainment as an important stressor and attempt to minimize that impact so as to avoid jeopardy to delta smelt and endangered anadromous species; entrainment-related mortality is also the primary stressor addressed by the SWP's incidental take permit for longfin smelt. CDFG 2009.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The evaluation of the effects of Alternative 4A shows that entrainment would be expected to be lower than under the NAA. Therefore, whatever effect entrainment currently has at a population level, it would be expected to be less under Alternative 4A. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p>
1723	173	<p>For both delta smelt and winter-run Chinook salmon, the Draft Plan and DEIS/DEIR repeatedly overstate the uncertainty surrounding the level of impact caused by entrainment and the threat posed by this stressor despite the:</p> <ul style="list-style-type: none"> - wealth of recent, detailed studies of the importance of entrainment to many covered 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The evaluation of the effects of Alternative 4A shows that entrainment would be expected to be lower than under the NAA. Therefore, whatever effect entrainment currently has at a population level, it would be expected to be less under Alternative 4A. See Master Response 5 regarding BDCP Conservation Measures</p>

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		<p>species</p> <ul style="list-style-type: none"> - strong conceptual support for addressing entrainment as a priority stressor, and - the Draft Plan's own emphasis on reducing entrainment through its primary conservation measure (creation of a new point of water diversion) <p>For example, regarding delta smelt entrainment, the Plan states:</p> <p>"Changing the primary point of diversion to the north Delta will contribute to further reducing the already low levels of entrainment of delta smelt (averaged across all water-year types) currently required under the USFWS (2008) BiOp. The entrainment levels required under the BiOp, which are much lower than historical levels, will be met or further reduced under the BDCP, depending on the water-year type."</p> <p>(Draft Plan at 3.3-100 (emphasis added).)</p> <p>Similarly, the DEIS/DEIR declares:</p> <p>"Despite the number of delta smelt that have been entrained by the State Water Project (SWP) and Central Valley Project (CVP) export facilities ... the direct effects of water diversions on the overall population dynamics of delta smelt are not well understood and there is disagreement among experts about the magnitude of these effects (Bennett 2005; Kimmerer 2008; Kimmerer 2011; Miller 2011)."</p> <p>(DEIS/DEIR at 11A-11.)</p> <p>Similarly, the Draft Plan lists entrainment as an "important" threat and stressor for the winter-run Chinook salmon population, but then immediately downplays this determination, declaring:</p> <p>"These facilities [including the SWP and CVP water export pumping facilities] also change the hydrodynamics in Delta channels and directly or indirectly increase vulnerability to entrainment at unscreened diversions. However, the effects of entrainment mortality on the population dynamics and overall adult abundance of winter-run Chinook salmon are not well understood."</p> <p>(Draft Plan at 3.3-128.)</p> <p>And, after identifying entrainment-related mortality as an "important threat and stressor" to winter-run Chinook salmon, the DEIS/DEIR concludes:</p> <p>"No quantitative estimates have been developed to assess the potential magnitude of entrainment losses for juveniles migrating through the rivers and Delta, or the effects of these losses on the overall population abundance of returning adult Chinook salmon. The effect of entrainment mortality on the population dynamics and overall adult abundance of winter-run Chinook salmon is not well understood."</p> <p>(DEIS/DEIR at 11A-56.)</p> <p>Finally, we note that the Draft Plan and DEIS/DEIR do not discuss the "uncertainties" regarding impacts of other stressors to nearly the same extent as they focus on what is unknown about entrainment-related mortality. The Delta Independent Science Board</p>	<p>and for more information on other stressors see Master Response 23.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>emphasized this uneven treatment of uncertainties as a major problem with the current Draft Plan and DEIS/DEIR, finding:</p> <p>"Uncertainties are inconsistently and incompletely addressed ... Uncertainties accompany every action and consequence discussed in the DEIR/DEIS, ranging from the designations of habitats for individual species, to projections of entrainment, to modeling results used in the analyses. When combined, these uncertainties will be compounded and propagate. Although the Draft BDCP discusses some of these uncertainties, they are treated inconsistently in the DEIR/DEIS and are largely ignored in the Executive Summary ... If the outcomes of an action are considered too uncertain or speculative, it is sometimes argued in the documents that this uncertainty is sufficient reason not to address the issue of uncertainty at all."</p> <p>(Delta ISB 2014 at 5.)</p>	
1723	174	<p>Stressors that do not relate to species' objectives:</p> <p>Often times, the Draft Plan's identification of stressors appears to be a post-hoc justification of proposed Conservation Measures rather than an effort to alleviate barriers to attainment of desired outcomes (objectives). For example, Appendix 5F claims that: "Removal of invasive SAV (submerged aquatic vegetation) is expected to increase the availability of freshwater spawning habitat for longfin smelt in the Delta." Draft Plan Appendix 5F at 5.F-iii. As described above, the Draft Plan inappropriately fails to identify improvements in longfin smelt abundance or longfin smelt spatial distribution as desired biological outcomes (objectives) of the BDCP; the Plan also fails to identify spatial distribution or abundance objectives for delta smelt. Thus, the Conservation Strategy must anticipate that increased availability of spawning habitat will improve longfin smelt and delta smelt productivity, which are identified objectives of the Draft Plan. However, the specific micro-habitats that longfin fish use for spawning are unknown, see Rosenfield 2010, so there is little or no support for the claim that SAV removal will increase availability of spawning habitat for longfin smelt. Similarly, the Appendix states that: "There is no indication ... that the delta smelt population is limited by the amount of suitable spawning habitat area because they spawn throughout the Delta in different years." Yet despite this acknowledgement, and the acknowledgment that "[s]pawning habitat for delta smelt in the wild is unknown," the Conservation Strategy and the incredibly confusing summary of delta smelt conceptual models located in the Effects Analysis nevertheless asserts that the extent of tidal marsh habitat is of "moderate" importance for the success of delta smelt egg deposition. [Footnote 49: The DEIS/DEIR notes that agency opinion is that this attribute is of "low" importance.] Draft Plan at 3.3-100; Draft Plan at 5.5.1-7. Despite the statement cited above from Appendix 5F, the DEIS/DEIR claims that one of the main purposes of BDCP's tidal marsh restoration (CM4) is to increase suitable spawning habitat for delta smelt, DEIS/DEIR at 11-278, and the DEIS/DEIR claims benefits to delta smelt spawning from removal of submerged aquatic vegetation, DEIS/DEIR at 11-283. So, the Plan, its technical appendices, and the DEIS/DEIR are ultimately confused and inconsistent with regard to the limitations imposed on smelt species' abundances by spawning habitat limitations.</p> <p>Ironically, while neither the benefits of increasing total spawning habitat acreage nor the efficacy of the proposed mechanism to accomplish that (SAV removal [Footnote 50: However, it is important to note that removal of SAV may have other benefits for covered species.]) are obvious, it is very clear that both smelt species are jeopardized by the increasingly narrow spatial distribution of available spawning habitat. The loss of access to</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Chapter 11 of this Final EIR/EIS.</p>

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		<p>spawning habitat, particularly along the San Joaquin River and in the Central Delta, confines delta smelt and longfin smelt spawning to a very small area and this represents a significant risk to both species' viability. See Rosenfield 2002; Rosenfield 2010. This stressor (limited spatial distribution of spawning habitat) is not identified in the Draft Plan. This is yet another example of how the BDCP's failure to identify the most important stressors results from its failure to thoroughly and adequately describe biological objectives for each attribute of viability. If the Draft Plan had identified an objective for the "spatial distribution" attribute of viability for delta smelt and/or longfin smelt, that desired outcome would naturally have led to a focus on the stress presented by limited spatial distribution of available spawning habitat (as distinct from total acreage of spawning habitat) and the Draft Plan might then have targeted the relevant stressor with appropriate conservation measures.</p>	
1723	175	<p>The Draft Plan fails to document the impact of the presumed illegal harvest stressor.</p> <p>In another example of failure to adequately evaluate stressors, the Plan emphasizes "Illegal Harvest" as a stressor on numerous covered fish species. Although the Plan expresses great faith that it will reduce the illegal harvest stressor for all the covered salmonid and sturgeon species, there is a big difference between reducing a presumed stressor and that progress leading to attainment of a desired (or required) outcome--if the stressor is not that important in limiting population viability, reducing the it will not lead to improved population viability. The problem statement for CM17 provides no assessment of the extent of illegal harvest, citing only one reference to published literature (a paper dealing with green sturgeon) and reference to the memo that describes CM17. We do not dispute that increasing staffing at the California Department of Fish and Wildlife's anti-poaching units may lead to a reduction in sturgeon poaching and it is possible that reduced poaching of adult sturgeon will help attain productivity targets for these two species. But neither the Effects Analysis nor the Conservation Strategy explains their ranking of the impact of this stressor relative to other stressors affecting sturgeon species.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on stressors see Master Response 23.</p>
1723	176	<p>The Conservation Strategy provides absolutely no basis for its expectation of benefits to salmonids from reduction in the illegal harvest of juvenile salmon, and the suggestion that reductions in the illegal harvest of juvenile salmon will have a favorable impact on salmon populations is inexplicable. Illegal harvest (or "poaching") of juvenile salmon is not mentioned as a significant stressor to these populations in the DRERIP conceptual life history model for salmonids. Williams 2010. Illegal harvest of these fish may occur; but does it actually affect abundance or productivity of Central Valley salmonids? And if so, is it a threat on the same level as other stressors to these populations? The Conservation Strategy is strangely unambiguous about the need to reduce the illegal harvest stressor, stating "any reduction in illegal harvest of covered fish species, whether inside or outside the Plan Area, is expected to contribute to the achievement of the biological goals and objectives for the covered fish species." Draft Plan at 3.4-319. This strong statement is in stark contrast to the Plan's equivocality and uneven treatment of entrainment-related mortality as a priority stressor discussed above, even though entrainment (in terms of salvage and expanded salvage) is a somewhat quantifiable impact for each of the covered species and poaching of juveniles is not. Though illegal harvest is unquantified in all cases and the numbers of juvenile salmon that are taken in illegal harvest almost certainly pales before the tens of thousands of Chinook salmon that appear in salvage (a small fraction of the number that are entrained in the SWP and CVP south Delta diversion infrastructure; see TBI 2012, the Plan strongly implies that illegal harvest of salmon juveniles is a more important stressor on salmonids than other potential stressors, including entrainment-related mortality. This</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>Regarding impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p>

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		implication is not credible.	
1723	177	<p>Even if poaching of adults is a significant problem for some salmonid populations, the degree of the problem is likely to vary across the different salmon populations based on factors that affect their susceptibility to poaching (i.e. the duration and timing of their presence in the Central Valley and the size of the waterways in which they are found). In his 398-page tome on Central Valley salmonids, Williams mentions "poaching" or "illegal harvest" of adult salmon twice (an indication of the relative importance of this stressor). Williams 2006. He acknowledges that though is difficult to quantify illegal harvest impacts, there are "some indications that it may be significant" for spring-run Chinook salmon. Id. at 248. However, no similar statement is made with regard to winter-run, Sacramento or San Joaquin fall-run or late-fall run Chinook salmon, or Central Valley steelhead. Both the Draft Plan and Williams 2006 suggest that spring-run Chinook salmon populations may be relatively more susceptible than other populations to poaching because they hold in small streams for weeks or months during the summer before spawning. Draft Plan at 3.4-322. However, this is immaterial to the Draft Plan's illegal harvest stressor reduction target for spring-run Chinook salmon (and all other populations), which specifies that poaching will be reduced "in the Plan Area," Draft Plan at 3.3-151-152, which is not in the habitat (upstream) where spring-run are believed to be more susceptible to illegal harvest. Furthermore, susceptibility to poaching is not an evaluation of the impact of illegal harvest in absolute or relative terms. The Effects Analysis (Chapter 5) inexplicably asserts that winter-run Chinook salmon are also susceptible to poaching, Draft Plan at 5.5.3-37, even though these fish hold in fresh water for a much shorter period than spring-run Chinook salmon and exhibit this behavior in a much bigger river that is much more easily patrolled than the high mountain streams used by spring-run.</p> <p>In sum, the Conservation Strategy and Effects Analysis assert, without analysis or supporting data, that illegal harvest "in the Plan Area" on adult sturgeon and both juveniles and adults of all Central Valley salmonid populations and that any reduction in that stressor will translate to meaningful progress towards attainment of related species-specific objectives. There is simply no support for these assumptions and many, particularly those regarding covered salmonid populations, are not likely to be true.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>Regarding impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p>
1723	178	<p>The Draft Plan Fails to adequately describe, evaluate and address Delta outflow and other known flow stressors.</p> <p>The Conservation Strategy fails to identify entrainment-related mortality or Delta outflow rates as stressors to longfin smelt despite the fact that two longfin smelt-specific objectives specifically incorporate these stressors. For example, one longfin smelt productivity objective uses flow-corrected abundance as its measure (LFSM1.1) and the other productivity objective sets a limit on entrainment-related mortality rates at the CVP and SWP (LFSM1.2). However, in the same tables that identify these desired biological outcomes, only "lack of food resources" is identified as a stressor for longfin smelt. As described in our critique of objective LFSM1.1, there is overwhelming evidence that Delta outflow is strongly correlated with stressors on longfin smelt populations in this Estuary. Jassby et al. 1995; Kimmerer et al. 2002; Rosenfield and Baxter 2007; CDFG 2009; Kimmerer et al. 2009; Mac Nally et al. 2010; Rosenfield 2010; CDFG 2010; Thomson et al. 2010. Delta outflow may be a direct stressor on both population abundance and distribution, as it affects larval transport and subsequent spatial distribution. Kimmerer 2002b; Dege and Brown 2004; Rosenfield 2010. The Department of Fish and Wildlife's life history conceptual model for longfin smelt describes "Delta outflow" and "salinity" (which is directly related to</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Chapter 11 of this Final EIR/EIS.</p>

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		<p>Delta outflow) as "important" stressors with "medium" to "high" certainty of impact and it explicitly links another important stressor, entrainment-related mortality, to Delta outflow rates. Rosenfield 2010 at 30. The Plan's failure to identify these two factors as major stressors on longfin smelt populations is inexplicable, especially since both freshwater flow and CVP/SWP operations also affect the "lack of food resources" that the Conservation Strategy identifies as the sole stressor it will attempt to address. Jassby et al. 1995; Kimmerer 2002; Rosenfield 2010.</p>	
1723	179	<p>In contrast to stressors like "lack of food resources" or "predation" or "illegal harvest", the reduction of which are consistently identified by the Plan as means for attaining numerous biological objectives, significant reductions and alterations to the timing of freshwater flow into, through, and out of the Delta are inconsistently identified as stressors. However, numerous state and federal agencies concur that reduced or otherwise altered patterns of flow into, through, and out of the Delta are among the most important stressors to native organisms and communities in the Delta. We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] have described this major shortcoming of the BDCP approach in numerous previous letters and communications; for example, regarding an appendix to a previous version of the Draft Plan, we wrote:</p> <ul style="list-style-type: none"> * ...a panel of experts convened by the State Water Resources Control Board for its flow hearings (SWRCB 2010) found "[F]low modification is one of the few immediate actions available to improve conditions to benefit native species"; * the State Board (2010) itself specifically addressed the BDCP stating: "...this [Public Trust Flow] report highlight[s] the need for the BDCP to develop an integrated set of solutions, to address ecosystem flow needs, including flow and non-flow measures. ...One cannot substitute for the other; both flow improvements and habitat restoration are essential to protecting public trust resources"; * the DRERIP conceptual life-history models for delta smelt, longfin smelt, and salmonids (for instance) each clearly identify water exports and fresh water flow (or the position of X2) as important drivers of population response; * the Final Recovery Plan for Central Valley salmonids (NMFS 2014) repeatedly emphasizes the need to improve fresh water flow conditions in the Delta and to reduce entrainment at water exports; * the Delta Science Council's Independent Science Board (DSC 2011) found that both "Changed hydrograph; reduced inflow and outflow" and "Entrainment at pumps & other diversions" were key stressors in the Delta (the former was listed in three different stressor categories)..." <p>(Memorandum to J. Meral from J. Rosenfield re: Review of BDCP Effects Analysis Appendix G December 22, 2011 (emphasis added).)</p> <p>Even though they are not explicitly identified as key stressors, the Draft Plan and DEIS/DEIR strongly imply that decreased and altered flow patterns are a major force affecting many of the covered aquatic species. For instance, increased flows are a key difference between the "High Outflow" and "Low Outflow" scenarios of Alternative 4 and, the High Outflow scenario performs better than many other Alternative 4 scenarios (though still inadequately) with regard to several of the biological objectives for aquatic species (such as OBAN escapement</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>predictions for winter-run Chinook salmon, see Draft Plan Appendix 5G at Table 5.G-19). But, because the Draft Plan's treatment of freshwater flow as a stressor that impedes attainment of numerous biological objectives is inconsistent, the Conservation Strategy fails to consider flow augmentations as a specific conservation measure that would reduce these stressors. Even Alternative 4 produces no flow-related effects that are considered "beneficial" under both a NEPA and CEQA standard, see DEIS/DEIR at 11-55 (Table 11-4-SUM1) because flow levels under this alternative do not constitute a substantial improvement over the status quo. [Footnote 51: One exception to the Draft Plan's failure to improve freshwater flow conditions is its provision of flows through Fremont Weir and the Yolo Bypass, both of which result from physical modifications to the landscape, rather than alterations in flow volumes. However, as we discuss elsewhere in these comments, both of these "improvements" are actually an example of BDCP's flawed baselines as both of these actions are already required under the National Marine Fisheries Service 2009 Biological Opinion, even if BDCP is not approved and implemented.]</p>	
1723	180	<p>Specific examples abound of the Draft Plan's failure to treat flow as an important stressor that can and should be addressed by the BDCP. The Draft Plan states that "altered migration flows" are a stressor for each of the covered salmonid populations, but, when it sets stressor reduction targets for these species, the Conservation Strategy seeks only to prevent further degradation to these migration flows. For instance, for winter-run Chinook salmon, the migration flow stressor target is: "Ensure that north Delta intake operations do not increase the incidence of reverse flows in the Sacramento River at the Georgiana Slough junction." Draft Plan at 3.3-139; see also Draft Plan at 3.3.151; 3.3.159, 3.3.169 (stressor reduction targets for spring-run Chinook, fall-run Chinook, and steelhead respectively). In other words, even where it does identify flow impairment as a major stressor to several species, the Conservation Strategy seeks only to maintain the status quo, rather than seeking to reduce this stressor directly compared to current conditions.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p>
1723	181	<p>Given such strong indication of the importance of flow modifications to sturgeon, it is indefensible that "altered flows" are not identified in the "assumed stressors" associated with biological objectives for either of the sturgeon species (perhaps more alarming, none of the stressor reduction targets identified for sturgeon species are specific, measurable, or time-bound, so it is not clear what, if anything, BDCP will do to actually address species-specific stressors). The National Marine Fisheries Service, commenting on an earlier version of the Draft Plan's biological objectives, requested greater emphasis on the need for adult attraction flow for sturgeon species. NMFS 2013 Progress Assessment at 15. Indeed, the Conservation Strategy identifies "Flow Operations" as an important "threat and stressor" to both white sturgeon and green sturgeon populations, stating:</p> <p>"River flows influence white sturgeon spawning, habitat availability, and prey resources, and have been shown to be related to YOY abundance. Modifications of flow rates have the potential to provide an unnatural cue for spawning, which could result in lowered reproductive success. The dispersal of larval white sturgeon is dependent on high spring river flows, which optimally consist of multiple large flow pulses. Reduced seasonal flows or flows mismatched ecologically with sensitive early life stages may reduce dispersal of these life stages when they are most vulnerable to native and nonnative predation. Flow reductions may serve to reduce or eliminate YOY survival even if spawning was successful. Outflow influences YOY, juvenile, and adult white sturgeon bay and delta habitats by influencing salinity. Tagging data demonstrate white sturgeon move upstream when saline waters encroach eastward in dry years, while white sturgeon expand use of bay habitat</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>For more information regarding action alternative operations refer to Chapter 3, of this Final EIR/EIS.</p>

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		<p>when brackish water is pushed westward in wet years (Israel et al. 2009)."</p> <p>(Draft Plan at 3.3-197; see also id. at 3.3-183 (green sturgeon).)</p> <p>Thus, the Plan clearly identifies the negative and important effects of altered freshwater flows and then either refuses to identify them as important stressors or fails to set targets for alleviating the stress caused by freshwater flow alterations, or both. This is a major inadequacy of the Draft Plan that defeats the point of clearly:</p> <ul style="list-style-type: none"> - linking species-specific biological outcomes (objectives) to forces that currently prevent the attainment of those objectives (stressors); - describing reductions in those stressors to a degree (stressor reduction targets) that will facilitate attainment of the objectives; - and then, designing conservation measures of appropriate type and magnitude to produce the specific desired effects. 	
1723	182	<p>The Draft Plan fails to describe how proposed Conservation Measures match, in either type or scope, the stressors it identifies and the DEIS/DEIR fails to analyze how outcomes of these Conservation Measures address the Draft Plan's desired outcomes (stressor reduction targets and biological objectives). As a result the DEIS/DEIR and Draft Plan fail to adequately evaluate the adequacy or efficacy of the conservation strategy.</p> <p>The National Research Council criticized a previous version of the Bay Delta Conservation Plan as "...a post-hoc rationalization of the water supply elements contained in the BDCP" and "a list but not a synthesized plan for the restoration activities." NRC 2010. Unfortunately, this remains an apt description of the Draft Plan in many respects. The Conservation Measures presented in the BDCP do not appear to be designed achieve specific reductions in stressors that are necessary in order to achieve desired outcomes (SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound] biological objectives); instead, they are incompletely described actions whose benefits are assumed to provide benefits. There is no evaluation of how different levels of investment in a particular Conservation Measure might provide different levels of benefit; neither is there an evaluation of how different Conservation Measures interact with each other to produce positive or negative synergies. Very often, the Plan, EA, and DEIS/DEIR simply assume that the conservation measures work perfectly as described, with no analysis given to how outcomes might differ if the Conservation Measures are less than 100% successful. The Delta Independent Science Board identified this as the first of its "major concerns" with the Draft Plan, stating:</p> <p>"Expectations for the effectiveness of conservation actions are too optimistic. -- Throughout the DEIR/DEIS, the BDCP actions, as supplemented by Avoidance and Minimization Measures and Mitigation Measures, are assumed to produce the anticipated benefits when they are needed to offset any impacts of BDCP actions. In essence, it is often argued that Conservation Measures (CM) 2-22 will have sufficient positive benefits for covered species to counterbalance any negative impacts of water diversions and changes in flow caused by proposed alternatives (CM1). This is an implausible standard of perfection for such a complex problem and plan.... It would be better to begin with more realistic expectations that include contingency or back-up plans."</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		(Delta ISB 2014 at 5; see also DSP Independent Science Review Panel Report 2014 at 45, 57.)	
1723	183	<p>The Draft Plan makes unfounded and unanalyzed assertions regarding the efficacy of the Illegal Harvest Reduction Measure (CM17) and fails to evaluate whether the Conservation Measure is appropriately scaled to the magnitude of the problem they are intended to address.</p> <p>The Conservation Strategy offers Conservation Measure 17 (CM17 -- additional investment in anti-poaching law enforcement teams) as a response to the Illegal Harvest stressor. Both the green sturgeon and white sturgeon DRERIP conceptual life history models, Israel and Klimley 2008; Israel et al. 2009, which are not referenced, mention illegal harvest of these species as an important (though unquantifiable) stressor, and we do not dispute that reducing illegal harvest of sturgeon in the Delta is worthwhile pursuit. However, the Plan's analysis of the problem and rationale for its proposed solution (CM17) appears limited to the following statement: "California has a population of approximately 37 million people (U.S. Census Bureau 2012), but has fewer than 200 field wardens. This is the lowest game warden-to-population ratio of any state in the nation." Draft Plan at 3.4-318.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and for more information on other stressors see Master Response 23.</p> <p>As noted in the section described by the commenter, the analysis was based on the best professional judgement of a DFW biologist and a DFW law enforcement.</p> <p>Regarding impact analysis for sturgeon see impacts AQUA-127 through AQUA-158, Chapter 11 of this Final EIR/EIS. The proposed project would not result in significant impacts to either sturgeon species.</p>
1723	184	<p>Despite an acknowledged lack of information on the extent of the problem, the Draft Plan vastly overstates claims regarding the likely impact of illegal harvest for salmonids and the likelihood that CM17 will solve those problems. The Effects Analysis simply asserts, "The BDCP will help reduce illegal harvest of adult winter-run Chinook salmon." Draft Plan at 5.5.3-22. Again, this confuses efficacy of the conservation measure with importance of the stressor. In this case, the Effects Analysis assumes that illegal harvest is of moderate importance to the population and that there is moderate certainty of that effect. Draft Plan at 5.5.3-22. In fact, there is no certainty at all of the effect of poaching on the winter-run Chinook salmon population or any salmonid population, see Williams 2006, Williams 2010, and it is unlikely that poaching is a large impact on most of these populations. Nonetheless, the Effects Analysis claims: "... with high certainty that there will be a high positive change to the illegal harvest attribute for adult winter-run Chinook salmon, as well as for foraging and migrating juveniles." Draft Plan at 5.5.3.23.</p> <p>Similar conclusions are drawn for spring-run Chinook salmon. The conclusions of high impact are over-inflated and neither the Conservation Strategy, Effects Analysis, nor the DEIS/DEIR offers supporting evidence to support this "high" level of certainty. This finding is attributed to the opinion of one agency biologist who wrote the memorandum describing the conservation measure and its costs -- this hardly represents a rigorous or independent review of conservation measure effects and reveals no effort to compare the relative merits of different Conservation Measures.</p> <p>Conclusions regarding illegal harvest reductions of steelhead are also overstated and are not supported by the available scientific information. The Effects Analysis states:</p> <p>"... it was assumed with low certainty (based on relatively little information) that illegal harvest of steelhead juveniles and adults is an attribute of low importance. It is concluded that there will be a high positive change to the illegal harvest attribute for steelhead under the BDCP, with high certainty based on the analysis presented by Roberts and Laughlin (2013) that is discussed further in the winter-run Chinook salmon analysis."</p> <p>(Draft Plan at 5.5.6-10.)</p> <p>However, the memorandum by Roberts and Laughlin presents no analysis whatsoever</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As noted in the section described by the commenter, the analysis was based on the best professional judgement of a DFW biologist and a DFW law enforcement.</p>

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		regarding the extent of illegal harvest of steelhead or winter-run Chinook salmon. There is no information in Roberts and Laughlin's memo that justifies a high certainty of high positive change resulting from reductions in steelhead poaching; there is also no information presented that can square these high expectations with the low importance of the stressor to begin with.	
1723	185	Because there is not even a qualitative estimate of the scope of the illegal harvest problem, the Conservation Strategy provides no way to evaluate whether CM17's proposed increase in enforcement staffing is adequate, too much of an investment, or too little. Also, the Draft Plan fails to evaluate whether this Conservation Measure's efficacy will be reduced by effectiveness of other Conservation Measures, such as the effort to reduce migration delays at the Fremont Weir (CM2). The Conservation Strategy relies heavily on a memo from California Department of Fish and Wildlife regarding the cost for this action, but that memo provides no estimate of the benefits anticipated from CM17 or whether more benefits could be expected from an even larger effort. Roberts and Laughlin 2013.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. As noted in the section described by the commenter, the analysis was based on the best professional judgement of a DFW biologist and a DFW law enforcement.
1723	186	The Draft Plan states that, "increased enforcement as part of CM17 will be focused on the Bay-Delta area and its waterways; however, increased enforcement outside of the Plan Area may occur as part of CM17." Draft Plan at 3.4-319. But the Draft Plan then states: "spring-run Chinook salmon are expected to experience the greatest benefit, because their over-summer holding and ease of locating may make them more susceptible to poaching than other runs." Id. at 3.4-322. Most current spring-run Chinook salmon holding habitat is far from the Delta in streams that drain the slopes of Mt. Lassen; staff time allocated to enforcing anti-poaching regulations for over-summering spring-run Chinook salmon will clearly not be available for in-Delta enforcement efforts. Similarly, the Effects Analysis suggests that reduced winter-run Chinook salmon poaching will occur due to enforcement efforts upstream on the Sacramento River holding grounds of this species. Draft Plan at 5.2-40. This holding habitat is approximately 2.5 hours or more from Fremont Weir; thus, staff that conduct anti-poaching efforts in winter-run holding habitat are not available for in-Delta efforts at that time. Also, winter-run Chinook salmon hold in the mainstem of the Sacramento River where they are less susceptible to poaching than, for example, spring-run Chinook salmon, see Williams 2006, and where anti-poaching efforts may be more challenging than in areas with fewer river access-egress options. Furthermore, the Effects Analysis suggests that anti-poaching efforts from CM17 will extend into the San Joaquin River drainage. Draft Plan at 5.5.5-54. Neither the Plan nor the DEIS/DEIR describe how all of these divergent presumed benefits from the conservation measure (and the Plan describes others, not mentioned here) will be realized.	Please see response to comment 1723-183 regarding CM17 of the BDCP.
1723	187	The Draft Plan Makes unfounded and scientifically inaccurate assertions regarding the efficacy of Tidal Marsh Restoration (CM4; Presumed Food Web Benefits). The BDCP Conservation Strategy focuses heavily on restoration of food web productivity in the Plan Area. Indeed, increases in the availability of prey is identified as a stressor reduction target for longfin smelt (Draft Plan at 3.3-120), and salmonids, splittail, delta smelt, and sturgeon (Draft Plan at 5.E-149 (Table 5.E.4-39)). The main proposal for addressing limited food web productivity is to restore thousands of acres of tidal and shallow sub-tidal habitat (CM4). The plan describes two principal purposes of this action: (1) to provide habitat for covered species, and (2) "To enhance the ecological functions and services of the Delta especially in regard to the Delta foodweb that supports many covered fish species." Draft Plan Appendix 5E at 5.E-ii.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.

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		<p>As we have stated repeatedly, our organizations generally support tidal and shallow sub-tidal habitat restoration in the Bay-Delta as a means of improving the quantity and quality of habitat for numerous wildlife species (especially, migratory waterfowl) and fishes that use these habitats extensively (e.g., Sacramento sucker), but, the BDCP must provide benefits to the fish and wildlife species that are covered by the Plan; ancillary benefits to other native species are welcome, but they cannot be the basis for permitting and implementing an HCP or NCCP. See, e.g., Environmental Defense Fund, Natural Resources Defense Council, The Bay Institute, and Defenders of Wildlife "BDCP: Performance Assessment from the Conservation Perspective" September 2011; Memorandum to J. Meral et al. From J. Rosenfield re: "Preliminary Review of BDCP Effects Analysis Appendix F" February 9, 2012. Contrary to the Draft Plan's assumptions and assertions in the DEIS/DEIR, there is little scientific evidence indicating that that restoration of the type and extent discussed in BDCP is likely to stimulate food production that will substantially benefit most of the covered species; there is no evidence that any increase in food availability will extend far beyond the immediate vicinity of the restoration projects to benefit life stages of covered species that do not frequent the restored habitat (see below).</p>	
1723	188	<p>The Draft Plan misrepresents cited scientific literature with regard to the potential efficacy of proposed Tidal Marsh Restorations to covered species.</p> <p>In comments on earlier versions of the BDCP, we documented the misrepresentation of scientific literature in BDCP documents regarding the likely effects of tidal marsh restoration. See "Partial Review of 2011 Draft of the BDCP Effects Analysis, April 4, 2011; Memorandum to J. Meral et al. from J. Rosenfield re: "Preliminary Review of BDCP Effects Analysis Appendix F" February 9, 2012. These mischaracterizations have not been corrected in the Draft Plan and thus the claims that specific benefits from proposed tidal marsh restorations are likely to accrue to covered species remain misleading and/or overstated.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	189	<p>The large uncertainties and potential negative effects to numerous fish species of restoring tidal marshes in the San Francisco Estuary were well-articulated by Brown (2003); he summarized the situation as follows: "... there is a high degree of uncertainty regarding the benefits of tidal wetland restoration for native fishes, including special status species such as delta smelt (<i>Hypomesus transpacificus</i>), chinook salmon (<i>Oncorhynchus tshawytscha</i>), steelhead rainbow trout (<i>O. mykiss</i>) and splittail (<i>Pogonichthys macrolepidotus</i>). Brown 2003 at 3. However, the Draft Plan cites Brown 2003 repeatedly as evidence that tidal marsh restoration will be good for a variety of covered fish species, see, e.g., Draft Plan at 3.4-119, even though there is nothing in Brown 2003 that would support that conclusion as the paper focuses on the rather large uncertainties and potential pitfalls of that position. [Footnote 52: Similarly, the Draft Plan cites "Siegel (2007)" as supporting claims regarding the benefits of tidal marsh restoration for numerous covered species, Draft Plan at 3.4-121, but this document is a "first draft" that clearly states that it is: "incomplete and not fully vetted" and that "...the very short time frame for development of this first draft means it is neither complete nor subjected to adequate scrutiny as a complete package." Seigel 2007 at 5.]</p>	<p>Please see response comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	190	<p>The Draft Plan cites the 2009 DRERIP Evaluation conducted for BDCP (Essex Partnership 2009) in a way that implies that these reviews supported the notion that restoration in the Cache Slough Restoration Opportunity Area would "increase rearing habitat area for Chinook salmon (Sacramento River runs), splittail, and sturgeon." Draft Plan at 3.4-121. However, that preliminary Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) review rated potential benefits to sturgeon and most Sacramento River Chinook</p>	<p>Please see response comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>

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		<p>salmon runs as "low" (at best) with low to minimal certainty (fall-run Chinook salmon were seen as possibly experiencing "moderate" benefits from this restoration, but again certainty was rated "low" for this potential outcome); on the other hand, potential negative outcomes from this restoration effort were judged to be of "medium" magnitude (at worst) for all the covered species. Essex Partnership 2009 (2009 DRERIP Evaluation).</p> <p>As we stated in our review of earlier BDCP efforts to justify the Draft Plan's tidal marsh restoration proposal, references to "Healy 1991" and "Kjelson 1982" are misleading; Healy (1991) is a 20+-year old book chapter that describes Chinook salmon behavior across the coast throughout their life cycle -- it provides no support for the notion that BDCP's proposed restoration of Suisun Marsh habitats will benefit Chinook salmon. Kjelson et al. 1982 (also the source of most of the information about salmon in this system in Healy 1991) provides no support for the notion that BDCP's proposed restoration of Suisun Marsh habitats will benefit Chinook salmon.</p> <p>Similarly, Hobbs et al. 2006 is referenced as supporting the notion that Suisun Marsh restoration will benefit longfin smelt and delta smelt, but this paper does not reference the potential effect of marsh restoration on either of these covered smelt species -- in fact, the words "marsh", "Suisun Marsh", "wetlands", and "restoration" do not occur at all in that paper, whereas the importance of the low salinity zone for rearing of both species is repeatedly emphasized. The Draft Plan cites "Moyle 2008" and "Fresh 2006" in support of a claim of benefits to covered species from proposed restoration of tidal marsh in the Suisun Marsh and Cache Slough ROAs. Draft Plan at 3.4-121. However, because these papers are not listed in the literature cited section of this document, it is not possible to review their relevance to the claims made in the Draft Plan.</p>	
1723	191	<p>The Draft Plan fails to match conservation measures to the presumed drivers of ecosystem stress they are intended to address.</p> <p>Approaches to ameliorate limited food web productivity should either address the causes of food supply limitations (i.e., produce stressor reduction) or circumvent those forces that currently result in reduced food supplies. The point of clearly identifying and characterizing stressors is to ensure that conservation measures are designed specifically to attack these problems. Thus, it is surprising that the stressors the Plan and DEIS/DEIR identify as limiting food supplies for covered species are not those that would be ameliorated by increased tidal marsh restoration. The Plan argues variously that invasive clam species (which graze on phytoplankton) and altered estuarine chemistry (both nutrients and toxins), and other stressors are the likely forces that drive the decline in this estuary's food web productivity. For example, in its rationale for setting the food web stressor reduction target relevant to its longfin smelt objective, the Conservation Strategy explains:</p> <p>"Researchers have hypothesized that a major factor in the decline of longfin smelt abundance is related to invasion by <i>Potamocorbula</i> and its subsequent disruption of the foodweb (Carlton et al. 1990; Alpine and Cloern 1992; Orsi and Mechum 1996; Kimmerer 2002a; Baxter et al. 2008:36). There is evidence that the disruption of the foodweb is the most significant change in the estuary's carrying capacity for other fishes (e.g., Kimmerer et al. 2000; Kimmerer 2006).</p> <p>...</p> <p>Total ammonia levels may be another factor affecting covered fish species by inhibiting primary productivity (Ballard et al. 2009; Dugdale et al. 2007; Dugdale et al. 2012 in Parker</p>	<p>Please see response comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration and Master Response 23 regarding other stressors. Please refer to Master Response 14 for information regarding Microcystis.</p>

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		<p>et al. 2012; Glibert 2010; Glibert et al. 2011; Parker et al. 2012; Wilkerson et al. 2006), altering the phytoplankton species assemblage (Baxter et al. 2010; Glibert 2010), or altering the role of invasive species (Ballard et al. 2009). The primary source of total ammonia in the Delta is effluent discharged from wastewater treatment plants, and the primary contributing facility is the Sacramento Regional Wastewater Treatment Plant. The frequency, severity,</p> <p>and distribution of effects from total ammonia levels are the subject of ongoing research, but current science indicates a high likelihood that decreasing loading of total ammonia from the Sacramento Regional Wastewater Treatment Plant would have beneficial consequences for phytoplankton productivity and thus the productivity of the pelagic foodweb in and downstream of the Sacramento River in the Plan Area. Section 3.5.1, Ammonia Load reduction, describes the analysis underlying this conclusion."</p> <p>(Draft Plan at 3.3-126.)</p> <p>Assuming that these food supplies are currently limited by stressors such as invasive clams, altered aquatic nutrient ratios, Microcystis, or contaminants, then any food supply benefit of the BDCP's habitat restoration will be substantially reduced by these very same problems.</p>	
1723	192	<p>Despite the Plan's focus on non-habitat related stressors as the drivers of decline in foodweb productivity, the Conservation Strategy does not identify measures to directly combat these stressors. Instead, the Conservation Strategy focuses on inundation of low-lying habitats under the expectation that these will generate food for covered species. The Plan does not describe why it believes that food produced by these "restored" wetlands and floodplains would not be subject to the same negative impacts (clam grazing and/or altered water chemistry) that it contends drive the current limits on food web productivity. Indeed, the Conservation Strategy at times acknowledges that its description of benefits likely to arise from tidal marsh and floodplain inundation are highly uncertain because of the risk that food produced on the restored areas will be consumed by invasive clams. The Effects Analysis states:</p> <p>Translation of the potential production implied by the prod-acre index into food for covered fish species is complicated by biological and physical conditions... In particular in shallow areas grazing rates of clams can exceed phytoplankton production rates resulting in no augmentation of zooplankton or other food sources for covered fish species (Lucas et al. 2012). Hydrodynamics can affect water residence time and the movement of food from sources to potential fish feeding areas. Because clam grazing rates and hydrodynamics vary across the Delta, the potential of primary production changes in Table 5.E.4-39 and Figure 5.E.4-86 to effectively convert to food for covered fish species will likely vary significantly among and within subregions and will depend greatly on local conditions and by large scale drivers of conditions such as flow, salinity and temperature."</p> <p>(Draft Plan, Appendix 5.E, at 5.E-147.)</p> <p>The Plan does not seem to acknowledge that, if estuarine chemistry is limiting productivity (as the Conservation Strategy suggests), then restoration of shallow water habitats will do nothing to address that limitation.</p>	<p>Please see response comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration and Master Response 23 regarding other stressors.</p>
1723	193	<p>In its confusing, and ultimately unresolved, portrayal of some of the stressors that may affect estuarine food supplies for covered species, the Effects Analysis states:</p>	<p>Please see Comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. It is acknowledged that Cloern et al. (2012) found statistical problems with the analysis by Glibert (2010);</p>

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		<p>In a precursor to the broader work by Glibert et al. (2011), Glibert (2010:229) concluded the following:</p> <p>"[A] clear management strategy [for managing food web impairments] is the regulation of effluent N discharge through nitrification and denitrification. Until such reductions occur, other measures, including regulation of water pumping or manipulations of salinity, as has been the current strategy, will likely show little beneficial effect."</p> <p>This suggests recognition that other attributes (stressors) such as entrainment may also be of importance, albeit secondary importance [to estuarine stoichiometry], according to Glibert (2010).</p> <p>(Draft Plan at 5.5.1-4 (emphasis added).)</p> <p>We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] and many other independent scientific reviews are skeptical of the analyses and nutrient management approach to foodweb stimulation promoted by Glibert (2010; Glibert et al. 2011). See, e.g., Cloern and Jassby 2012; Cloern et al. 2014; DSP Outflows Review Panel Report 2014. However, we agree that management actions should respond to (or at least not be blind to) the root causes of the problems they are intended to address. [Footnote 53: This paper was the subject of a scathing re-analysis by Cloern et al. 2012 which showed that: "... Cumulative Sum Control Chart (CUSUM)-transformed variables often have an apparent statistically significant correlation even if none exists between the original untransformed series. Moreover, even if a statistically significant relationship could be established between CUSUM-transformed variables, there is no proven basis for inferring relationships between the original variables. ... As a real example, Glibert (2010) inferred a strong negative association between delta smelt abundance and wastewater ammonium from regression of CUSUM-transformed time series. However, the Pearson correlation ($r = -0.096$) between the time series ... is not significant, even under the naïve IID assumptions ($p = 0.68$). In short, correlations between CUSUM-transformed variables should not be used as a substitute for analysis of the original untransformed variables." Cloern et al. 2012.] Ironically, though the Effects Analysis cites this argument, it does not acknowledge that restoration of tidal marsh and sub-tidal habitat do not respond to, and would be impaired by, the stressors the Draft Plan cites as driving food web productivity declines.</p> <p>Meanwhile, the BDCP Plan and DEIS/DEIR documents do not analyze the documented effects of:</p> <ul style="list-style-type: none"> - Increased freshwater flow rates (and the related position of the salinity field, "X2") on production of zooplankton species that covered fish species eat. Jassby et al. 1995; Kimmerer 2002; - Increased freshwater flow rates on the alleged food web effects arising from unbalanced nutrient concentrations. Dugdale et al. 2007, 2012, 2013; - Reduced south Delta exports (and associated hydrodynamic modifications) on food web productivity. Jassby et al. 2002; Cloern and Jassby 2012; and - Freshwater flow management on the susceptibility of this ecosystem to invasion by disruptive, non-native species. Winder et al. 2011. 	<p>however, the purpose of the section in the draft BDCP was to present alternative conceptual models—the conceptual model remained valid, as presented in the revised statistical analysis by Glibert et al. (2011).</p> <p>It is unclear in what fashion it would be possible to analyze how the effects of the alternatives could be analyzed in the context of assessing invasive species, given that the identity of future invasive species and their environmental requirements are unknown, and that other factors such as drought are of importance in determining species invasions (Winder et al. 2011). The public draft BDCP (incorporated into the EIR/S by reference) analyzed effects on <i>Potamocorbula</i> (see Appendix 5.F and Chapter 5), and the California WaterFix BA submitted in August 2016 analyzed effects on the foodweb through entrainment of phytoplankton carbon at the NDD (as well as qualitative consideration of south Delta entrainment changes and in situ production). Regarding food web effects on zooplankton, the existing relationships are not strong and suggest mixed responses, if any, depending on species. The effects of outflow and its interactions with nutrients on lower trophic levels based on the conceptual work of Dugdale et al. will need re-examination with changes in ammonium inputs, and is worthy of additional consideration as part of, for example, the longfin smelt research program proposed under the preferred alternative, Alternative 4A (California WaterFix). The effects of outflow focus on relationships to fish species based on relationships identified as important during agency coordination on methods to be used in the various environmental analyses. The main focus in these are the winter-spring relationship to abundance for longfin smelt and the fall relationship to abiotic habitat index for delta smelt. The effects on other species such as striped bass, American shad, and bay shrimp are also included in the FEIR/S.</p>

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1723	194	<p>The Draft Plan's analysis of CM4 fails to use the best available science and is inconsistent with numerous peer reviews.</p> <p>Many of the purported benefits of CM4 are unsupported by the BDCP Effects Analysis and/or they are contradicted by previous analyses and published literature. Although at times the document acknowledges uncertainty, by and large the Effects Analysis reiterates assertions made throughout the document regarding the presumed benefits of BDCP's tidal marsh restoration efforts, stating:</p> <p>"Restored tidal marshes are expected to provide increased phytoplankton production, which will benefit zooplankton such as copepods that are an important prey item for listed fish (e.g., delta smelt, longfin smelt, and splittail), other estuarine fish, and other aquatic organisms. Substrates in restoration areas will provide habitat for macroinvertebrates which will also result in beneficial food web effects."</p> <p>(Draft Plan at 5.4-11.)</p> <p>The Effects Analysis fails to support this claim with a specific analysis relating its conservation measures to the attainment of stressor reduction targets. For example, the Conservation Strategy identifies the following stressor reduction target for longfin smelt:</p> <p>"Increase the average late-winter and early-spring (late February to April) density of zooplankton (target of 7,000/m³ of calanoid copepods) in the Cache Slough Restoration Opportunity Area (ROA), West Delta ROA, and Suisun Marsh ROA and/or supply adequate transport flows (sustained or pulse flows) to move longfin smelt larvae to areas with adequate food resources (target of 7,000/m³ of calanoid copepods). Achieve this target by year 15. Increasing food abundance will contribute to increased longfin smelt juvenile survival immediately following yolk-sac absorption by providing food resources suitable for juvenile longfin smelt within the Plan Area."</p> <p>(Draft Plan at 3.3-120.)</p> <p>We approve of the specificity of this stressor reduction target (though we do not comment here on its adequacy), but the point of providing such targets is to guide the Effects Analysis and DEIS/DEIR to evaluate whether such targets will be met by the Conservation Strategy, as proposed. Neither the Effects Analysis nor the DEIS/DEIR delivers an analysis of food web effects that are comparable to the target above.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration and Master Response 23 regarding other stressors.</p>
1723	195	<p>The presumption that tidal marsh restoration will substantially improve food production for most or all of the covered fish species ignores the weight of scientific and agency opinion which indicates that the expectation of food exports are highly uncertain and too small to significantly benefit pelagic fish species even if the amount of food web stimulation that the Plan anticipates actually occurs. For example, in 2012 the U.S. Fish and Wildlife Service stated that, "The plan's ultimate conclusions regarding the outcome of creating such large new areas of tidal marsh remain more positive and certain than the literature and scientific authorities suggest they should be. U.S. Fish and Wildlife Service, FWS BDCP Effects Analysis red flags for March, 2012 ("USFWS Red Flags 2012") at 8-9. In its 2013 comments on proposed habitat restoration under the BDCP, the Delta Stewardship Council noted that, "[s]ome suggest enhanced flow may also provide more reliable benefits to the ecosystem than marsh restoration, the benefits of which are less certain and not yet well documented." DSC 2013 BDCP Comments. Similarly, in its review of the Effects Analysis' estimation of food web impacts resulting from physical habitat restoration under the BDCP,</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>

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		<p>the Delta Science Program’s Independent Review Panel wrote "...the BDCP analyses are ambiguous and conclusions and estimates of net effects overestimate the net positive impacts of conservation measures. DSP Independent Science Review Panel 2014 at 59. Regarding habitat restoration in particular, they wrote</p> <p>"Restoration of tidal wetlands (and other communities) is highly uncertain and at least an extremely long process. The Effects Analysis does not adequately justify the critical assumption of the benefit of tidal wetland restoration as a food web subsidy for covered pelagic fish given the uncertainties of tidal wetland restoration itself. A critical issue is the implicit expectation that restoration activities will result in increases in abundance of lower trophic levels, but it is uncertain whether the resulting increased production will result in food web pathways supporting covered species. The presentation of phytoplankton-based and tidal wetland macrophyte detritus-based food webs as alternative ecosystem processes, rather than as an integrated system, also significantly complicates the interpretation of the potential benefit of BDCP restoration. For foraging salmonids, the Effects Analysis did not evaluate the reduced extent to which salmonids would have access to rehabilitated habitat when the north Delta intakes are operating and flows are reduced."</p> <p>(Id. at 7-8.)</p> <p>In addition, they wrote that,</p> <p>"...there is great uncertainty associated with the restoration of the wide range of ecosystems slated for restoration. Many of these systems have a poor record of achieving restoration, especially in short-to-moderate time periods. This range of ecosystems also varies considerably in the degree of difficulty of restoring functions. Nonetheless, the outcomes for conservation measures and their interaction and effectiveness are glossed over and uncertainties are not apparent in conclusions and summary discussions."</p> <p>(Id. at 37.)</p> <p>Furthermore, that panel found that the Draft Plan and DEIS/DEIR frequently failed to assess the potential negative impacts of conservation measures, such as habitat restoration, stating:</p> <p>"With respect to food webs, wetland and aquatic systems restoration are assumed to be effectively restored and functional immediately or in a short time frame and meet the biological objectives of the BDCP. This result is based on a number of additional assumptions, all of which contain considerable uncertainty. Similarly, while potentially negative impacts on the success of restoration are considered in passing, e.g., invasive bivalves, none of their potential effects are incorporated into their analyses or conclusions. The simplest effects perspective of the BDCP is that it edits out all potential outcomes except for the most favorable one."</p> <p>(Id. at 57.)</p> <p>A separate review by a different assemblage of independent experts concluded that many of the BDCP’s assessments of impacts "... hinge on overly optimistic expectations about the feasibility, effectiveness, or timing of the proposed conservation actions, especially habitat restoration." Delta ISB 2014 at 3.</p>	

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1723	196	<p>Another review of BDCP conducted by experts in ecosystem processes and aquatic ecology of the Bay-Delta ecosystem (this one commissioned by The Nature Conservancy and American Rivers) reached a similar conclusion, noting that "The BDCP is overly optimistic about the likely benefits of tidal marsh restoration to the smelt species, particularly the extent of food production." Mount and Saracino et al. 2013 at 70-71 (emphasis added). They conclude:</p> <p>"The BDCP is overly optimistic about the potential benefits to delta and longfin smelt of physical habitat restoration. Longfin smelt do not appear to use marshes as habitat to any great extent. Delta smelt are also considered pelagic but their persistent abundance in the Cache Slough complex, and greater abundance in shallow rather than deep water, suggests some potential benefit to their population of expanded marsh in that area. The magnitude of this benefit is impossible to predict, as is the degree to which marsh and floodplain restoration might cause an increase, or reverse the decline, in the delta smelt population. Under these conditions it is premature to assert that the restoration activity will have such an effect, until studies including pilot projects and even some smaller full-scale restoration projects can show whether an effect is to be expected.</p> <p>"The idea that restored marsh and floodplain will export substantial amounts of zooplankton to the open waters of the estuary is not tenable. The ecology of shallow waters suggests that shallow areas are more likely to be sinks for zooplankton. Even if they were sources, simple mass-balance considerations indicate that the resulting export would produce at most a small enhancement of extant zooplankton of the open waters. This idea should be dropped from discussions of BDCP."</p> <p>(Mount and Saracino et al. 2013 at 82.)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	197	<p>In general, scientific reviews of the potential for large-scale tidal marsh restoration to produce significant benefits to pelagic fish species in the Bay Delta (e.g. via enhanced food web productivity) have concluded that such effects are speculative and unlikely to be realized to the extent expected by the BDCP Effects Analysis. For example, the National Research Council in 2010 concluded that, with respect to the USFWS 2008 Biological Opinion's habitat restoration action in the Reasonable and Prudent Alternative (RPA),</p> <p>"The tidal habitat management action in the RPA requires creation or restoration of 8,000 acres of intertidal and subtidal habitat in the delta and in Suisun Marsh. This action has not been controversial because it does not affect other water users. The committee finds that the conceptual foundation for this action (Action 6) is weak because the relationship between tidal habitats and food availability for smelt is poorly understood. ... The committee recommends that this action be implemented in phases, with the first phase to include the development of an implementation and adaptive management plan (similar to the approach used for the floodplain habitat action in the NMFS Biological Opinion), but also to explicitly consider the sustainability of the resulting habitats, especially those dependent on emergent vegetation, in the face of expected sea-level rise. In addition, there should be consideration of the types and amounts of tidal habitats necessary to produce the expected outcomes and how they can be achieved and sustained in the long term. The committee supports the monitoring program referred to in Action 6, and appropriate adaptive management triggers and actions."</p> <p>(NRC 2010 at 6.)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>

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1723	198	<p>A recent review by nine authors with vast experience in fisheries and shallow sub/inter-tidal habitats of the Bay-Delta (Herbold et al. 2014) concluded:</p> <p>"Movement of plankton from a tidal marsh (beyond the immediate area of tidal exchange) is likely to be limited and to decrease strongly with distance. Even under ideal circumstances, plankton in water discharged from tidal marsh cannot greatly affect the standing crop of plankton in large, deep channels. Feeding by clams and other introduced species can further reduce contributions of marsh plankton to open-water foodwebs."</p> <p>(Herbold et al. 2014 at 1-2 (emphasis added).)</p> <p>These authors also found that, "In the modern San Francisco estuary, tidal wetlands can be important habitats for many fishes, but likely will have little effect on the export of food available to fish at any significant distance." Id. at 3. And they state:</p> <p>"Restored tidal wetlands are unlikely to have much effect on food webs in the upper estuary's open waters. The shallow depth and small volume of water on tidal wetlands compared to the vast volume of open water in the Delta channels and Suisun Bay means that the flux of wetland phytoplankton and zooplankton would be inconsequential to pelagic food webs. We are unaware of reports from the worldwide literature in which substantial quantities of zooplankton are exported from marshes to open waters, whereas several studies show net import of zooplankton to fish consumption on site."</p> <p>(Id. at 4.) [Footnote 54: While publication of this paper occurred after publication of the BDCP documents and the DEIS/DEIR, each of the authors has been available to the BDCP planning team and several of the authors have been engaged in the planning and technical analyses of BDCP components. Their conclusions are not new results, but represent longstanding perspectives of experts in the Bay-Delta ecosystem's aquatic foodwebs.]</p> <p>These conclusions echo findings of BDCP's own earlier review of six tidal marsh restoration measures considered in the BDCP; for the most part, these tidal marsh restoration measures have been retained in the current BDCP Conservation Strategy. In our review of this earlier effects analysis (the 2009 DRERIP evaluation, see Essex Partnership 2009), which considered a variety of conservation measures in addition to tidal marsh restoration proposals (but no alternative water management regimes), we found that "... covered species are expected to receive only "Minimal" or "Low" benefits from most of the proposed conservation measures" and "...a substantial portion of the positive results are characterized by "Low" to "Minimal" certainty.</p> <p>Thus, the actual outcome of many of these actions is likely to be significantly less than projected, based on magnitude scores alone. The Bay Institute letter to BDCP Steering Committee, August 17, 2009 at 3-4.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	199	<p>The Draft Plan and DEIS/DEIR assume benefits accrue to species that are unlikely to benefit from the Conservation Measure, even when the presumed benefit is not related to a previously identified stressor.</p> <p>The Draft Plan and DEIS/DEIR tend to claim that projected benefits from conservation measures will benefit numerous species even when the presumed benefit does not alleviate an identified stressor on the species' population. For example, with regard to habitat restoration, the Effects Analysis claims repeatedly that species such as steelhead may benefit from the anticipated increase in potential rearing habitat associated with tidal</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>

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		<p>marsh restorations; this expectation is contradicted by the Habitat Restoration Appendix's acknowledgement that "steelhead are generally thought to move quickly through estuarine habitats because of their larger size at outmigration." Draft Plan, Appendix 5E, at 5.E-116. Similarly, the conceptual model for Central Valley salmonids concludes "Spring Chinook, or at least the Butte Creek population, pass quickly through the Delta, so habitat restoration there seems unlikely to do much for them. The same is probably true for late fall Chinook, and for steelhead." Williams 2010 at 41.</p> <p>In fact, an expert panel convened by the BDCP planning process (the 2009 Delta Regional Ecosystem Restoration Implementation Plan -- DRERIP -- evaluation) to review the potential benefits of tidal marsh measures found that, with the exception of effects to Sacramento splittail (a species that does well in marsh habitats), five of the six tidal marsh measures evaluated were expected to generate "minimal" to "low" benefits, at best, for the covered fish species and the likelihood of these small benefits was "minimal" to "low" in most cases. By contrast, each of the six regional tidal marsh restoration efforts studied in detail by the expert panel was expected to generate negative effects of "moderate" to "high" magnitude (with "medium" to "low" certainty) for covered species. These negative impacts included the potential for restored wetlands to harbor or facilitate impacts from invasive competitor and predator species. For both positive and negative impacts, the magnitude of effects generated by tidal marsh restoration was acknowledged to depend on site-specific considerations among other uncertainties. Essex Partnership 2009. In their more recent review, the Delta Science Program Independent Review Panel emphasized similar concerns, stating:</p> <p>"Migrant life histories are less likely to benefit from habitat restoration activities, which are a key focus of the BDCP conservation measures. This implies that spring Chinook and steelhead may experience less benefit from BDCP actions than other salmonid species, or they may even experience a negative net effect in response to reduced spring flows. The key question, which deserves more attention in the BDCP, is whether the migrant life history will sufficiently benefit from conservation measures to offset moderate negative impacts related to reduced spring flows."</p> <p>(DSP Independent Science Review Panel Report 2014 at 30; see id. at 57-58.)</p>	
1723	200	<p>The Draft Plan makes the unfounded assumption that all planned restorations will occur when and to the extent planned and will be 100% successful.</p> <p>In addition to the lack of scientific evidence that the Bay-Delta food web is likely to be substantially improved by restoring tidal marsh habitats, there is great uncertainty regarding the assumed effectiveness of marsh restoration measures -- that is, even if tidal marsh restoration supports the Bay-Delta food web in the manner anticipated by the Draft Plan, there is no certainty that each individual restoration will be maximally effective in producing these results. If some of the restoration actions are less effective at producing food for covered species (or more effective at supporting invasive competitor or predator species) than the Plan assumes, then the overall benefit of this measure will be reduced. The State Water Resources Control Board identified this general concern, in its July 5, 2013 comment letter, which states "The fishery and aquatic resources impact analysis does not appear to analyze scenarios in which conservation measures are not 100% successful." SWRCB 7/5/13 BDCP Comments at 32.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	201	<p>There are growing concerns that physical and economic limitations (including the lack of</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred</p>

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		<p>willing sellers) may prevent BDCP from achieving the overall restoration acreage. Reviews from NMFS (2013), USFWS (2013), SWRCB (2013) and the Delta Science Program Independent Review Panel (2014) have raised the concern that the physical characteristics of the Estuary cannot support the tidal marsh restoration. For instance, the State Water Resources Control Board, commenting on the 2013 Administrative Draft of the BDCP, wrote:</p> <p>"The BDCP relies on habitat restoration to provide adequate ecosystem conditions to achieve the biological goals and objectives of the project. Available tidal energy, and the associated tidal exchange, might be attenuated as restoration projects begin to be constructed and put into operation. The reduction in tidal exchange might reduce the export of phytoplankton and reduce turbidity. Both of these effects might reduce the effectiveness of existing and future restoration areas."</p> <p>(SWRCB 7/5/13 BDCP Comments at 5.)</p> <p>The Board also expressed concern that the Administrative Draft of the BDCP did not "appear to analyze the effects of changes in tidal energy exchange that may result after construction and implementation of habitat restoration projects, and how those changes in tidal energy might affect transport of food and turbidity to locations where pelagic species are present." Id. The current public draft of the BDCP still fails to analyze the effects of habitat restoration on tidal energy and vice versa.</p>	<p>alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures, BDCP funding and tidal marsh restoration.</p>
1723	202	<p>The Delta Science Program Independent Review Panel points to another potential physical limitation on the BDCP's ability to effectively restore tidal marsh habitats:</p> <p>"The issue is sediment supply for these restorations. The BDCP assumes a constant sediment concentration for the time period of the plan (Appendix 5.E, pp. 43-44: turbidity held constant in models and interpretations), yet they indicate that sediment concentration has been declining over the past 50 years (p. 109) and that the BDCP conservation measures will further reduce the sediment supply by an additional 8-9%. While in their discussion of sediment supply, they also conclude that declining sediment concentration and the impact of CM1 will mean much lower sediment supply, these issues have no impact on the BDCP analysis and inference. Yet the loss of sediment supply creates great uncertainties in the rate and potential for restoration of these habitats, while only the most optimal circumstances are modeled or estimated."</p> <p>(DSP Independent Science Review Panel Report 2014 at 58 (emphasis added).)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p>
1723	203	<p>Any benefits of tidal marsh habitat restoration can only materialize after the restoration projects are implemented. The implementation schedule for CM4 indicates that less than half of the total "tidal wetland restoration will be completed by year 15 (the end of the so-called "Early Long-term" period). Draft Plan at 6-5. Thus, most of the presumed benefits provided by tidal marsh restoration actions (assuming there are net benefits) to covered species will only become apparent decades into the BDCP permit term, and the full benefits described in the Plan cannot materialize until after the permit-term is completed, assuming that the schedule is accurate and restorations are not significantly delayed. The Effects Analysis and DEIS/DEIR also tend to assume that benefits of tidal marsh restoration materialize as soon as the restoration occurs, despite the scientific consensus that such restorations evolve over long time periods. DSP Independent Science Review Panel Report 2014; Herbold et al. 2014; Delta ISB 2014. The DEIR/DEIS offers no alternative strategy for conserving and restoring covered species (such as accelerated or more aggressive implementation of other conservation measures or temporary improvements to freshwater</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The new preferred alternative, 4A, would include substantially less tidal marsh restoration relative to the BDCP. See Master Response 5 regarding BDCP Conservation Measures and tidal marsh restoration.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>flow regimes) during the long implementation horizon for CM4. The long delay in the Plan's effort to provide benefits to covered species is asymmetrical to the timing of actions intended to provide water supply reliability benefits. See Draft Plan at 6-3 (North Delta conveyance operations could begin as early as year 11). This asymmetric approach is inconsistent with the NCCPA's requirement for conservation and mitigation measures to be implemented roughly proportional in time and extent" to the impacts under the Draft Plan. See Cal. Fish and Game Code [Section] 2820(b)(3)(B).</p>	
1723	204	<p>The Delta Science Program Independent Review Panel's Phase 3 review of BDCP summarizes many of our concerns with the DEIS/DEIR's analysis of food web impacts arising from the BDCP:</p> <p>"An overarching assumption is that conservation measures have rapid and positive impacts. With respect to food webs, wetland and aquatic systems restoration are assumed to be effectively restored and functional immediately or in a short time frame and meet the biological objectives of the BDCP. This result is based on a number of additional assumptions, all of which contain considerable uncertainty. Similarly, while potentially negative impacts on the success of restoration are considered in passing, e.g., invasive bivalves, none of their potential effects are incorporated into their analyses or conclusions. The simplest effects perspective of the BDCP is that it edits out all potential outcomes except for the most favorable one."</p> <p>(DSP Independent Science Review Panel 2014 at 57 (emphasis added).)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>
1723	205	<p>The Draft Plan and DEIS/DEIR fail to use the best available science in assessing the effects of proposed actions.</p> <p>Given the failure to identify legally adequate restoration outcomes for BDCP, the logical shortcomings of the Conservation Strategy's design, the failure to apply the best available science to analysis of ecological stressors and problems in the Bay-Delta ecosystem, and the failure to explain or justify many of the conservation measures in terms of their contribution to success, it is not surprising that the DEIS/DEIR and Draft Plan predict that the biological outcomes anticipated from implementation will not achieve the biological goals and objectives, let alone achieve legally adequate outcomes. In addition, the Draft Plan's Effects Analysis inappropriately overlooks, de-emphasizes, or underestimates potential negative impacts to the covered species and the ecosystem attributes resulting from Plan implementation. The Draft Plan and DEIS/DEIR frequently identify high "uncertainty" surrounding projected outcomes or model predictions, but, despite this acknowledgement, they proceed to draw conclusions that are usually favorable to the BDCP -- we (Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute) interpret the large uncertainties as a lack of credible evidence that the hypothetical positive results of the Draft Plan are likely to arise and/or that potentially severe negative outcomes will be avoided. Furthermore, the Plan's estimation of ecosystem and species-specific benefits are routinely biased in a way that is overly optimistic about the magnitude and certainty of likely impacts. Even when scientific information demonstrates the biological objectives are unlikely to be achieved or that species or ecosystem attributes of viability will continue to decline (even to the point of potential extinction during the duration of the BDCP) the Draft Plan concludes that the BDCP will successfully contribute to the recovery of covered species. [Footnote 55: As we emphasize elsewhere, this is not the correct legal standard under the NCCPA.] Finally, the methods and results applied towards analyzing likely plan impacts are inadequate and</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive management. It is assumed the Collaborative Science and Adaptive Management Program (AMP) developed for Alternative 4A would not, by itself, create nor contribute to any new significant environmental effects; instead, the AMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 4A.</p>

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		frequently biased in a way that favors permitting of the Plan.	
1723	206	<p>This is not the first time we [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] have raised our serious concerns with the analysis or interpretation of the Plan’s likely effects, and numerous independent scientific reviews have repeatedly emphasized serious deficiencies in the analysis and interpretation of Plan impacts. For instance, the Delta Science Program’s Independent Review Panel found that the BDCP Effects Analysis "tends to overreach conclusions of positive benefits for covered fish species, given the inability to quantify the over-all net effects and the realization of high uncertainty," the Delta Science Program (DSP) Independent Science Review Panel Report at 25, and that it:</p> <p>"... Does not adequately acknowledge the extensive uncertainty associated with the BDCP’s assumptions and predictions. In its current form, at the level of detail conveyed, in the models used, and in the verbal assessments and conclusions, the level of uncertainty is often downplayed. Within appendices sometimes more explicit discussion of uncertainties can be found, but there is a disconnect between the summary pages with the conclusions drawn in Chapter 5. In situations in which an array of outcomes may be possible, only the more beneficial outcomes are used in conclusions about the BDCP. Communication of uncertainty would be improved by consideration of a range of potential outcome values in models."</p> <p>(Id. At 8 (emphasis added).)</p> <p>The Delta Independent Science Board concurred with the Independent Review Panel’s conclusions regarding the Effects Analysis and had a similarly harsh critique of the DEIS/DEIR, concluding that, "We find, however, that the science in this BDCP effort falls short of what the project requires," Delta ISB 2014 at 1, and they also find that, "the DEIS/DEIR currently falls short of meeting this ‘good enough’ scientific standard" of the best available science," Delta ISB 2014 at 3. In particular, they concluded that:</p> <ol style="list-style-type: none"> 1. Many of the impact assessments hinge on overly optimistic expectations about the feasibility, effectiveness, or timing of the proposed conservation actions, especially habitat restoration. 2. The project is encumbered by uncertainties that are considered inconsistently and incompletely; modeling has not been used effectively to bracket a range of uncertainties or to explore how uncertainties may propagate. 3. The potential effects of climate change and sea-level rise on the implementation and outcomes of BDCP actions are not adequately evaluated. 4. Insufficient attention is given to linkages and interactions among species, landscapes, and the proposed actions themselves. 5. The analyses largely neglect the influences of downstream effects on San Francisco Bay, levee failures, and environmental effects of increased water availability for agriculture and its environmental impacts in the San Joaquin Valley and downstream. 6. Details of how adaptive management will be implemented are left to a future management team without explicit prior consideration of (a) situations where adaptive management may be inappropriate or impossible to use, (b) contingency plans in case 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board’s letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p> <p>An assessment of constituent effects downstream of the Plan Area (i.e., in San Francisco Bay) was added to the Water Quality analysis in the RDEIR/SDEIS.</p> <p>For information regarding environmental baselines used in the EIR/S, please see Master Response 1. The NEPA analysis relies on the No Action Alternative, which includes sea level rise and climate change, whereas the CEQA analysis uses Existing Conditions, which shows only the impacts of the project, but no impacts of climate change or sea level rise.</p> <p>The Federal and State Lead Agencies have done their best to make the EIR/EIS for the proposed project as fair, objective, and complete as possible. The Lead Agencies are following the appropriate legal process and are complying with CEQA and NEPA in preparing the EIR/EIS for the proposed project. These agencies readily acknowledge, however, that the document addresses a number of topics for which some scientific uncertainty exists. Such uncertainty can give rise to differing opinions as to what conclusions may be reached. For more information regarding the uncertainty associated with the outcomes noted in the draft BDCP, please see Master Response 5.</p> <p>Considerable scientific uncertainty exists regarding the Delta ecosystem, including the effects of CVP and SWP operations and the related operational criteria. To address this uncertainty, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive management. It is assumed the Collaborative Science and Adaptive Management Program (AMMP) developed for Alternative 4A would not, by itself, create nor contribute to any new significant environmental effects; instead, the AMMP would influence the operation and management of facilities and protected or restored habitat associated with Alternative 4A.</p> <p>Collaborative science and adaptive management will support the proposed action by helping to address scientific uncertainty where it exists, and as it relates to the benefits and impacts of the construction and operations of the new water conveyance facility and existing CVP and SWP facilities.</p> <p>The collaborative science effort is expected to inform operational decisions within the ranges established by the biological opinion and 2081b permit for the proposed action. However, if new science suggests that operational changes may be appropriate that fall outside of the operational ranges evaluated in the biological opinion and authorized by the For more information on adaptive management, please see Master Response 33.</p>

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		<p>things do not work as planned, or (c) specific thresholds for action.</p> <p>7. Available tools of risk assessment and decision support have not been used to assess the individual and combined risks associated with BDCP actions.</p> <p>8. The presentation ... Makes it difficult to compare alternatives and evaluate the critical underlying assumptions.</p> <p>(Id. At 3.)</p> <p>We concur with and reiterate these conclusions of both the Delta Independent Science Board and the Independent Science Review Panel’s assessments of the Draft Plan and DEIS/DEIR.</p>	
1723	207	<p>We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] find that both documents repeatedly fail at the analytical level, in multiple other ways, including:</p> <ul style="list-style-type: none"> - Failing to analyze impacts with regard to each attribute of viability (i.e. abundance, productivity (survival), spatial extent of spawning habitat, and life history diversity; McElhany et al. 2000 and described above) for each covered species; - Selectively presenting positive results of analyses when the same analyses also reveal negative outcomes; - Dismissing modeling results (or entire models) that indicate the Draft Plan and operational alternatives are likely to have negative outcomes relative to baseline conditions (as modeled in the future under the assumption of climate change); - Selectively applying "uncertainty" as an excuse to dismiss modeling outcomes that reflect negatively on the Draft Plan and operational Alternatives, but ignoring model variance wherever modeling results are deemed to reflect positively on the Draft Plan and Operational Alternatives; - Incorrectly measuring uncertainty (when it is addressed at all) to reach conclusions of "no difference" between Alternatives and the appropriate baseline, when a valid comparison of results would likely reveal significant differences between Alternatives and NAA; - Failing to demonstrate that the Draft Plan is likely to achieve its biological objectives, and that the modeling and other analyses show that the Draft Plan is unlikely to achieve these goals and objectives; - Failing to demonstrate that the Draft Plan would improve upon or even maintain current conditions for covered species, many of which are designated as threatened or endangered; - Using average values (and, worse "mean" values) across all years to reflect likely effects of modeled alternatives rather than analyzing the range (maximum and minimum) and median of effects modeled within different year-types -- the modeling outputs results are far more reflective of the conditions that will affect conservation and restoration outcomes (i.e. the "mean" condition will not occur uniformly, rather different year-type conditions will occur in unpredictable sequences); - Dismissing the importance of a negative impact by applying arbitrary, capricious, and 	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Federal and State Lead Agencies have done their best to make the EIR/EIS for the proposed project as fair, objective, and complete as possible. The Lead Agencies are following the appropriate legal process and are complying with CEQA and NEPA in preparing the EIR/EIS for the proposed project. These agencies readily acknowledge, however, that the document addresses a number of topics for which some scientific uncertainty exists. Such uncertainty can give rise to differing opinions as to what conclusions may be reached.</p>

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		<p>opaque standards regarding the threshold magnitude at which an effect would be considered important (often the Draft Plan accepts a positive result as having a beneficial "effect" while dismissing as unimportant, or "small", an analogous negative result of greater magnitude);</p> <ul style="list-style-type: none"> - Dismissing entire stressors (including those identified by the Draft Plan and/or in agency management documents and those managed in current regulations) as unimportant whenever analyses show that the Draft Plan and operational alternatives will cause and increase in this stressor; - Discounting its own modeling of inputs (e.g. flows, temperatures, reservoir storage) and outputs (population responses to modeled changes in condition) such that it is impossible to tell which, if any, analyses in the Draft Plan and DEIS/DEIR the reader is expected to believe. 	
1723	208	<p>Draft Plan objectives for longfin smelt are inadequate to attain the NCCPA (and ESA) standard for [longfin smelt].</p> <p>The Draft Plan's Biological objectives for longfin smelt as outlined in the Conservation Strategy are inadequate. The Draft Plan offers no targets for improvement (objectives) or actions to alleviate the threat this population experiences from human activities that lead to reduced spatial distribution, curtailment of life history diversity, or reduced absolute abundance, all of which are major concerns for this species (Rosenfield 2010). And, as described above, The Draft Plan's targets for longfin smelt productivity plainly do not guide the BDCP towards recovery of this species. One objective for longfin smelt productivity (LFSM1.1) assumes, without a specific rationale, that only a small fraction of the global goal and objective for longfin smelt will be attained via BDCP actions, even though the bulk of this population spends most of its life cycle in areas that are affected by freshwater flow through and out of the Plan Area and the species population displays long-term, statistically significant, high magnitude positive correlation with Delta outflow, which the BDCP will alter. The other objective for longfin smelt productivity -- a proposed limit on entrainment mortality (LFSM1.2) -- is inadequate as it permits potentially catastrophic rates of entrainment mortality in any one year and does not specify how entrainment impacts to life history diversity in this species will be limited.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The public draft BDCP included two main species-specific objectives for longfin smelt. It is unclear why the commenter suggests that LFSM1.1 would not guide the species toward recovery, given that the proposed metric clearly states that the objective would be met if 5 of each 10 consecutive years or more of future indices fall above the zero line and the 10-year running average of the metric exceeds zero; this would indicate that the response per unit outflow had increased which, in combination with the determination of appropriate spring outflow per the spring outflow decision-tree process, would be provide for conservation and management of the species.</p> <p>For additional information regarding decision tree, please see Master Response 44.</p>
1723	209	<p>The Draft Plan fails to accurately identify and address the correct stressors on [longfin smelt].</p> <p>The Draft Plan is ultimately confused and inconsistent as to its strategy for restoring longfin smelt productivity and abundance as revealed by its inconsistent and inaccurate identification of stressors that currently affect this population. The Draft Plan claims that "The conservation strategy for longfin smelt focuses on the same three primary stressors discussed for delta smelt (food, predators, and entrainment)." Draft Plan at 3.3-115. But, "lack of food resources" is the only stressor listed in the table describing species-specific objectives and stressor reduction targets for longfin smelt. Id. At 3.3-120. Commenting on a stressor (limited spawning habitat) that was identified in an earlier version of the Draft Plan, USFWS recommended that the BDCP "...provide a plausible prediction of marginal longfin smelt benefits that will be realized by enhancing extent of spawning habitat or delete the corresponding stressor reduction target. USFWS 2013 Progress Assessment at 10. Apparently, that advice was accepted as there is no mention of a spawning habitat limitation for longfin smelt in the current draft Conservation Strategy (Chapter 3) and the Draft Plan's Effects Analysis tersely and accurately states that: "spawning habitat for longfin</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-19 through AQUA-32, Chapter 11, of this Final EIR/EIS.</p>

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		smelt in the Delta is unknown." Draft Plan at 5.5.2-8. It is therefore surprising that the Draft Plan's Effects Analysis proceeds to analyze potential benefits to longfin smelt spawning anticipated to arise from the construction of new tidal habitats.	
1723	210	The Effects Analysis presents results of a "Habitat Suitability Index", despite its admission that there is no information on longfin smelt spawning micro-habitat requirements. The Effects Analysis claims that there would be "considerably more" tidal habitat available for longfin smelt egg deposition (10% more in the Late Long Term) and that tidal marsh habitat restoration will be of "high" benefit to longfin smelt. Given the lack of knowledge about the extent of spawning habitat, the lack of evidence that longfin smelt spawning habitat limits population abundance or productivity (see Rosenfield 2010; USFWS 2013 Progress Assessment), and the Draft Plan's own statements, the finding of benefit from the estimate of BDCP's creation of "new" spawning habitat simply lacks scientific support. Even if that projected increase in spawning habitat were somehow correct, it likely would have little or no impact on the population since there is no reason to believe (and the Draft Plan does not contend) that spawning habitat limitation limits the population currently.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-19 through AQUA-32, Chapter 11, of this Final EIR/EIS.
1723	211	The Conservation Strategy does not identify as a stressor on longfin smelt either "altered migration flows" (as it does for each covered salmonid species) or "flow operations" (as it does for sturgeon species. See Draft Plan at 3.3-183, 3.3-197. The failure to identify Delta outflow as a significant stressor on longfin smelt abundance is inexplicable given the fact that the relationship between longfin smelt abundance and freshwater outflow from the Delta has been strong, statistically significant, and durable over the past four decades of fish community sampling in this ecosystem. Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; Sommer et al. 2007; Kimmerer et al. 2009; Rosenfield 2010; Thomson et al. 2010; Mac Nally et al. 2010. Through Delta flow and Delta outflow are also believed to drive longfin smelt distribution, Dege and Brown 2004, in ways that affect longfin smelt entrainment, Grimaldo et al. 2009; Rosenfield 2010, and to stimulate production of key longfin smelt food items, see Jassby et al. 1995; Kimmerer 2002; Rosenfield 2010. Elsewhere in its Effects Analysis, the Draft Plan appears to agree that freshwater flows are important to this species, stating that, "Current science indicates that the decline in longfin smelt relative abundance observed from monitoring has been a result of foodweb changes, and that longfin smelt relative abundance is strongly correlated with winter-spring outflow from the Delta." Draft Plan at 5.5.2-7. Indeed, the method used by both the Draft Plan and the DEIS/DEIR to estimate changes in longfin smelt populations in the future relies entirely on changes in the position of X2 (an indicator of freshwater flows). It is therefore inexplicable that the Draft Plan does not identify the driving effect of low freshwater flows on longfin smelt and take direct action to ameliorate this important stressor to this species and the ecosystem as a whole.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. As the commenter demonstrates, the BDCP consistently recognizes Delta outflow as a driving factor in longfin smelt abundance variations. In fact, the Conservation Strategy discusses this relationship at length. However, outflow is not identified as a stressor because it does not seem to be accountable for the recent decline in longfin smelt abundance. As discussed in the Conservation Strategy, year to year variations in longfin smelt abundance continue to be related to Delta outflow, but the relationship has changed, such that a given level of outflow now produces a lower abundance of smelt. A reduction in food resources is believed to be the main cause of the multi-year decline, and is therefore identified as the main stressor, as discussed in the Conservation Strategy. However, an increase in the frequency of years with high Delta outflow is expected to increase longfin smelt abundance, as demonstrated in the effects analysis for BDCP's high-outflow scenario. Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-19 through AQUA-32, Chapter 11, of this Final EIR/EIS.
1723	212	The Plan does not identify entrainment-related impacts as a known stressor for longfin smelt despite the facts that (a) the Conservation Strategy identifies an entrainment reduction objective for longfin smelt, (b) the California Department of Fish and Wildlife conceptual model of longfin smelt life history (Rosenfield 2010) identifies entrainment as a stressor to this population (in certain year types), and (c) the California Department of Fish and Wildlife has issued an incidental take permit to the State Water Project (CDFW 2009) with terms that are intended to limit entrainment mortality for this species.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-19 through AQUA-32, Chapter 11, of this Final EIR/EIS.
1723	213	These statements and omissions are inconsistent with the best available science. The Conservation Strategy, Effects Analysis, and DEIS/DEIR are inconsistent in their evaluation and weighting of stressors, stating that certain stressors are important in one place, but	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.

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		<p>then reaching a different conclusion regarding the importance of the same stressors elsewhere. Thus, despite the overwhelming wealth of scientific evidence regarding the impact of freshwater flows on the productivity of longfin smelt, the Effects Analysis says there is uncertainty regarding the role of outflow. See, e.g., Draft Plan at 5.5.2-29. Disregarding the fact that the Conservation Strategy sets a target intended to limit entrainment-related mortality, the Effects Analysis claims "... entrainment of adult longfin smelt is no longer considered to be an attribute of importance as a constraint to the longfin smelt population." Draft Plan at 5.5.2-19. This failure to identify and evaluate two of the most important stressors on the longfin smelt leads to the Plan's failure to design adequate conservation measures for this species and the failure to properly interpret clear impacts to the longfin smelt population that will arise from implementation of the Draft Plan.</p>	<p>Please also see response to comment 1723-211 regarding longfin smelt and outflow.</p>
1723	214	<p>Conservation Measures do not adequately address known stressors for [longfin smelt] and/or their impacts are overstated.</p> <p>The failure to provide for adequate winter-spring freshwater flows in the conservation strategy for longfin smelt is unacceptable and leads to the DEIS/DEIR's projection of declining longfin smelt populations under the Draft Plan and the inability to attain necessary conservation targets.</p> <p>We have repeatedly emphasized the need for the BDCP to consider operational alternatives that result in increased Delta outflows in the winter and spring months as a means to improve the abundance and productivity of longfin smelt. See, e.g., Letter from five conservation non-government organizations (NGOs) to John Laird and David Hayes, September 30, 2011; Memorandum to Jerry Meral from The Bay Institute, Environmental Defense Fund and Contra Costa Water District, December 21, 2011, RE: "Review of Appendices C and D"; Letter from six conservation NGOs to Gerald Meral, March 1, 2012, RE: "BDCP Draft Effects Analysis"; Memorandum to J. Meral et al. from J. Rosenfield re: "Preliminary Review of BDCP Effects Analysis Appendix F," February 9, 2012. Despite the extremely strong and long-lasting correlations between longfin smelt abundance and winter-spring freshwater outflow from the Delta (a relationship that the Draft Plan and DEIR/DEIS repeatedly acknowledge implicitly), the Draft Plan does not contemplate increases to freshwater flow as a conservation measure for longfin smelt or other species and most of the operational alternatives considered in the DEIS/DEIR actually reduce Delta outflows below current, unacceptably low levels.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please also see response to comment 1723-211 regarding longfin smelt and outflow.</p>
1723	215	<p>The State Water Resources Control Board [(SWRCB)] criticized a previous version of the DEIS/DEIR for its failure to consider alternatives that resulted in increased Delta outflows, stating:</p> <p>"Compared to the no-project alternative ... it appears that all of these operational scenarios decrease total Delta outflow (see Attachment 1: State Water Board analysis) in the late-long term. The justification for this limited range of Delta outflow scenarios is not clear given that there is strong information on the possible need for more Delta outflow for the protection of aquatic resources and the uncertainty that other conservation measures will be effective in reducing the need for flow. Specifically, recent research indicates that restoration of tidal marsh may not be feasible, possible, or effective. Accordingly, it appears appropriate to include a broader range of Delta outflows under the decision tree process."</p> <p>(SWRCB 7/5/13 BDCP Comments at 5.)</p> <p>Similarly, the U.S. Fish and Wildlife Service [(USFWS)] recommended that the previous</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>There continues to be scientific uncertainty regarding the level of outflow necessary to meet the needs of delta smelt (in fall months) and longfin smelt (in spring months). To address this existing scientific uncertainty, CM1 includes a decision tree process. The decision tree process is a structured methodology that provides focused testing to better understand the relationship between outflow and the needs of these species and to arrive at a scientifically sound outflow requirement under the BDCP. Please see Master Response 44 for an explanation of the Decision Tree Process for selecting outflow requirements and Master Response 28 regarding operational criteria.</p>

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		<p>version of the BDCP "... acknowledge that spring Delta outflow is a well-established driver of longfin smelt abundance, and formulate a stressor reduction target that provides spring Delta outflow in accordance with the Service's standing recommendation." USFWS 2013 Progress Assessment at 10. Despite these powerful and direct recommendations that the BDCP provide improved Delta outflows for covered species like longfin smelt and for improved estuarine functions, the problem remains unaddressed in the current Draft Plan. [Footnote 56: Alternative 8 in the DEIS/DEIR does provide an increase in winter/spring Delta outflow as recommended by the SWRCB, but the State's proposed project fails to provide increased winter/spring Delta outflow, despite the comments from the SWRCB and other agencies. The so-called "high outflow scenario" (HOS) largely maintains the status quo of winter/spring outflow, and both the Draft Plan and DEIS/DEIR fails to analyze the "CS5" operations developed by the fishery agencies in 2012 to provide increased outflow and improve other flow conditions for fish and wildlife.]</p>	
1723	216	<p>Speaking to the utility of increasing Delta freshwater flows rates to protect estuarine fish (like longfin smelt), fish habitat, and other ecosystem processes, a recent independent science review panel wrote:</p> <p>"There is very strong (even unequivocal) evidence that specifying outflow requirements and objectives specific to seasons (specific months) is a rational and scientifically justified approach. As summarized in SWRCB (2010 -- Development of Flow Criteria), there is solid evidence that high outflows during various combinations of winter-spring months benefit a variety of species. ... High winter-spring flows into the Bay-Delta (low X2) have been shown or argued to act as cues for fish spawning migrations, to improve reproductive success, and to increase survival of juvenile anadromous species migrating seaward. High winter-spring outflows also benefit a variety of species through early-life-stage dispersal, access to floodplain habitat, and reduced entrainment."</p> <p>(DSP Outflows Review Panel Report 2014 at 62 (emphasis added).)</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please also see response to comment 1723-211 regarding longfin smelt and outflow.</p> <p>Please see Master Response 28 regarding operational criteria.</p>
1723	217	<p>The Draft Plan and DEIS/DEIR's expectation of large benefits to the longfin smelt population resulting from the restoration of shallow sub-tidal habitats is scientifically unsupported, as numerous independent scientific reviews have found</p> <p>Rather than take action to address the primary documented stressor (and driver of other stressors) with known, high-order effects on longfin smelt (Delta fresh water outflows), for which scientifically credible and feasible measures exist to address the stressor (improve outflows during winter/spring months) the Draft Plan proposes to reduce (or maintain currently inadequate) Delta outflows during key seasons and year-types [Footnote 57: See Draft Plan, Appendix 5C at 5C.5.3-348 (Table 5C.5.3-189); id. at 5C.5.3-350 (Table 5C.5.3-190). This is also true with respect to the cumulative impacts of BDCP and climate change.], and relies on completely speculative habitat restoration measures under the theory that these will bolster food supplies for longfin smelt and that improved food supplies can counter the negative effects of reduced Delta outflows. Although many reviews refer to the potential benefits of habitat restoration in general as "highly uncertain", with regard to their potential to bolster longfin smelt abundance or productivity, these measures are actual quite certain to produce negligible benefits to longfin smelt. The Conservation Strategy and DEIS/DEIR repeatedly assert BDCP benefits to longfin smelt from increased prey production that is supposed to occur as a result of habitat restoration. See, e.g., DEIS/DEIR at 11-34; Draft Plan at 5.5.2-25, -29.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The BDCP consistently recognizes Delta outflow as a driving factor in longfin smelt abundance variations. In fact, the Conservation Strategy discusses this relationship at length. However, outflow is not identified as a stressor because it does not seem to be accountable for the recent decline in longfin smelt abundance. As discussed in the Conservation Strategy, year to year variations in longfin smelt abundance continue to be related to Delta outflow, but the relationship has changed, such that a given level of outflow now produces a lower abundance of smelt. A reduction in food resources is believed to be the main cause of the multi-year decline, and is therefore identified as the main stressor, as discussed in the Conservation Strategy. However, an increase in the frequency of years with high Delta outflow is expected to increase longfin smelt abundance, as demonstrated in the effects analysis for BDCP's high-outflow scenario. For more information on longfin smelt, please see Chapter 11, EIR/EIS and Master Response 17. Please also see response to comment 1723-211 regarding longfin smelt and outflow.</p>

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1723	218	In the BDCP's own 2009 review of tidal marsh restoration proposals (which are quite similar to the proposals in the Draft Plan), a team of experts on local fish ecology and estuarine dynamics rated the potential for these measures to benefit longfin smelt as "low" to "marginal" (at best), with "low" to "marginal" certainty (at best), in every case but one. For all but one proposed tidal marsh restoration area, at least one foreseeable negative impact to this species was rated "high", with "low" to "medium" certainty; for example, shallow sub-tidal habitat restoration in the West Delta Restoration Opportunity Area was judged to run the risk of "establishment of undesirable species" (such as Centrarchid bass (predators) or Corbula clam (competitors), which would be a "high" negative impact. Essex Partnership 2009 (2009 DRERIP Evaluation, Appendix D). The recent Delta Science Program Independent Review Panel identified the same two potential negative outcomes of habitat restoration measures and suggested that they were relatively certain to arise, questioning only whether they could be controlled when they did arise.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP tidal marsh restoration. Regarding impact analysis for delta smelt and longfin smelt see impacts AQUA-19 through AQUA-32, Chapter 11, of this Final EIR/EIS.
1723	219	DSP Independent Science Review Panel Report 2014. On page 11-20, the DEIS/DEIR mentions the potential for invasion by Corbula clams of habitats restored under CM4 as a potential negative impact to delta smelt (but not to longfin smelt), but does not mention the potential for invasion/foraging by invasive piscivorous fish (e.g., Centrarchids). Similarly, the Draft Plan's appendix on habitat restoration (Appendix 5E) barely acknowledges the potential risks associated with colonization of restored habitats by non-native species, including predatory fish, simply declaring that "Marsh channels and levee breaches will be designed to maintain flow velocities that minimize conditions favorable to the establishment of nonnative submerged aquatic vegetation (SAV) and floating aquatic vegetation (FAV) and habitat for nonnative predatory fish." Draft Plan, Appendix 5E at 5.E-47 (emphasis added). The Draft Plan's appendix on fish stressors (5F) does identify the risk of predation on covered species in the restored habitats described by the Draft Plan, but it is similarly non-specific regarding control or prevention of this problem (relying on vaguely-described removal of invasive aquatic vegetation, which would not guarantee elimination of the problem) and non-committal regarding the likely outcome of this response. Draft Plan Appendix 5F at 5.F-iv.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Under the new preferred alternative, 4A, tidal marsh restoration would still occur but on a more limited scale as Environmental Commitment 4. Please see Chapter 3 of the EIR/EIS for more information on the restoration included in Alternative 4A. The Chapter 11 Fish and Aquatics analysis discusses the impacts related to the new alternative.
1723	220	Since the publication of the 2009 DRERIP Review, additional independent reviews have assessed the potential for habitat restorations to benefit pelagic fish species, like longfin smelt, in the manner anticipated by the Draft Plan. As described in detail above, the overwhelming consensus of independent scientists is that BDCP's assumption of benefits are vastly overstated and unlikely to materialize. DSP Independent Science Review Panel Report 2014; Delta ISB 2014; Herbold et al. 2014; Mount and Saracino et al. 2013; NRC 2010. The assumption that restored habitats will enhance prey production, to the extent necessary to support species' global biological objectives is particularly poorly supported for longfin smelt. This is because longfin smelt occupy pelagic environments, typically in or near deep-water channels. Rosenfield and Baxter 2007; Rosenfield 2010. These habitats are furthest from the location of proposed shallow water habitat restoration meaning the benefit of any food web export from restoration sites will be attenuated (via dispersal and consumption by other species) before it can reach longfin smelt. Reviewing the specific question ("Is the analysis of food web benefits to longfin smelt from habitat restoration appropriate?"), the Delta Science Program's Independent Review Panel concluded that both the mechanism and magnitude described for increased production of longfin smelt prey resulting from habitat restoration was "highly uncertain" and that the contribution to increased plankton abundance available for longfin smelt was "basically hypothetical because of the uncertainties of primary consumption within the restoring ecosystems, especially by non-indigenous clams, and whether these systems would be sources or sinks	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546. Under the new preferred alternative, 4A, tidal marsh restoration would still occur but on a more limited scale as Environmental Commitment 4. Please see Chapter 3 of the EIR/EIS for more information on the restoration included in Alternative 4A. The Chapter 11 Fish and Aquatics analysis discusses the impacts related to the new alternative.

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1723	221	<p>for any increased production." DSP Independent Science Review Report 2014 at 60-61.</p> <p>Despite the consensus of the scientific community that this effect is tenuous and extremely small at best [Footnote 58: However, as we have noted repeatedly, there are likely to be benefits to some other species and ecosystem processes from tidal marsh habitat restoration projects, and we encourage implementation of restoration projects in an adaptive management process. See also footnote 80, infra.], Figure 5.5.2-5 reveals that the Draft Plan assumes "moderate" benefit (with low certainty) from enhanced zooplankton production for juvenile longfin smelt. The figure is contradicted by the Draft Plan's accompanying text, which indicates a "low" benefit of enhanced zooplankton production from its restoration projects. Draft Plan at 5.5.2-13. There is very little, if any, empirical support for a finding of even "low" benefit. And, even if the benefits of habitat restoration for longfin smelt were as "low" or "moderate" as the Draft Plan alternately claims, there is no way for such benefits to materialize until well into the Plan's Late Long Term (LLT) because most restoration activity will not be complete until that time and benefits of marsh restoration typically require substantial time to evolve post-restoration. See, e.g., Herbold et al. 2014.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Under the new preferred alternative, 4A, tidal marsh restoration would still occur but on a more limited scale as Environmental Commitment 4. Please see Chapter 3 of the EIR/EIS for more information on the restoration included in Alternative 4A. The Chapter 11 Fish and Aquatics analysis discusses the impacts related to the new alternative.</p> <p>Please see Master Response 33 for information on adaptive management and monitoring.</p>
1723	222	<p>The Conservation Hatchery Proposal is unacceptable as part of a conservation strategy for longfin smelt under an HCP/NCCP.</p> <p>Certain conservation measures described in the Plan and DEIS/DEIR as beneficial to longfin smelt are inadequate and/or irrelevant to the conservation standard for this species. For example, a hatchery's function is to increase the number of larvae that survive per female spawner. Providing a hatchery for longfin smelt would not address the problems the Draft Plan or other sources identify as stressors for longfin smelt. Food limitations, inadequate transport flows, etc. all arise after the egg incubation/early larval stage -- producing and releasing more small longfin smelt into an environment that is not expected to support them does not address or circumvent the problems facing longfin smelt and is not likely to achieve conservation of this species in the Plan Area. Furthermore, the Draft Plan does not identify or address any of the myriad known problems with hatchery production of other fish species (e.g. salmon) as a conservation method. We have raised this issues numerous times. See Letter from The Bay Institute, Environmental Defense Fund, Defenders of Wildlife to BDCP Steering Committee December 20, 2009; J. Rosenfield letter to Meral et al. dated February 9, 2012. Conservation hatcheries for smelt (CM18) do not address the primary stressors on longfin smelt. The Fish and Wildlife Service has commented that "CM18 is linked to wild population goals and objectives for delta and longfin smelts. This is inappropriate and contrary to the Service's present policy for these species." USFWS 2013 Progress Assessment at 10.</p> <p>Also, as described above, removal of invasive submerged aquatic vegetation to "increase the availability of freshwater spawning habitat for longfin smelt in the Delta," see Draft Plan Appendix 5F at 5.F-iii, does not address threats to longfin smelt abundance because (a) there is no indication that the abundance of longfin smelt spawning habitat limits abundance or productivity of this species (though it may be limiting a different attribute of longfin smelt viability: spatial distribution) and (b) there is no indication that longfin smelt will spawn in areas where SAV has been removed -- very little is known about longfin smelt preferred micro-habitats for spawning. Rosenfield 2010.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Note that under the new preferred alternative, Alternative 4A, none of the provisions of CM18 would be implemented.</p>
1723	223	<p>The Draft Plan and DEIS/DEIR's assessment of effects on longfin smelt are inaccurate and do not attain the conservation standard for this species. In addition, presentation of these</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred</p>

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		<p>results is biased, internally inconsistent, and confusing.</p> <p>Despite the Draft Plan's claims that it would contribute to recovery of longfin smelt and would have beneficial effects on the species, and the Draft Plan's objectives that (though inadequate) attempt to define improved biological outcomes, the Draft Plan and DEIR/DEIS both demonstrate that BDCP is likely to result in large declines in longfin smelt abundance, is unlikely to achieve the biological objectives for the species, and that the proposed project would cause additional negative impacts on the species. These declines are due, in large part, to the projected declines in the winter-spring Delta outflows under the BDCP as compared to the environmental baseline, shown in Table 11-4-7 and Table 11-4-9, that tend to drive longfin smelt population abundance. The Draft Plan and DEIS/DEIR portray these large declines as benefits because their modeling suggests that populations under BDCP will be slightly larger than without BDCP (though the magnitude of modeled change is likely not statistically significant and therefore unlikely to materialize). As we discuss elsewhere the DEIS/DEIR uses the wrong baseline and the significant reduction in outflow under the Draft Plan as a result of BDCP and other projects and effects cumulatively (including the effects of climate change) will cause significant environmental impacts, including cumulative impacts.</p>	<p>alternative.</p> <p>As shown in Chapter 5 of the public draft BDCP (p. 5.5.2-12), the proposed BDCP HOS was estimated to give greater relative abundance than existing biological conditions in the late long term, which incorporates the effects of climate change and sea level rise. As discussed in Section 5.5.2.1.1 of the BDCP public draft, the uncertainty regarding the necessary spring Delta outflow, together with other conservation measures, to provide conservation and management of longfin smelt would be addressed with the spring outflow decision-tree process.</p> <p>Please also see Master Response 44 related to the Decision Tree process and Master Response 17 regarding impacts to smelts and attainment of the NCCPA standard. Also, please see Master Response 1 regarding environmental baselines, Master Response 9 regarding the cumulative impact analysis, and Master Response 19 regarding climate change.</p>
1723	224	<p>Draft Plan and DEIS/DEIR misuse and misinterpret models to project longfin smelt abundance and fail to use the best available scientific information</p> <p>Despite the Draft Plan's claim of "uncertainty" that Delta freshwater outflows drive longfin smelt abundance (see, e.g., Draft Plan at 5.5.2-29), the DEIS/DEIR project future longfin smelt abundance based solely on a model derived from the well-documented relationship between X2 (an indicator of Delta fresh water outflow rates) and longfin smelt abundance indices (i.e., Kimmerer et al. 2009). The fact that no other quantitative tools are used to provide a robust estimate of the effect of BDCP on longfin smelt population size reveals the differential strength of evidence underlying the Draft Plan's two conceptual models for longfin smelt: one that attributes population size to levels of Delta freshwater flow (as identified in numerous peer reviewed papers and quantitative models, including that used in the DEIS/DEIR) and the second that attributes population size to unidentified levels of prey abundance.</p> <p>As discussed elsewhere, the relationship between Delta outflows (or X2) and longfin smelt abundance is among the best-documented, durable, statistically significant ecological relationships in this Estuary. See, e.g., SWRCB 2010 Flow Report; DSP Outflows Review Panel Report 2014. Kimmerer et al. 2009, like numerous other research papers, clearly demonstrates that freshwater flows (as represented by X2) remain strongly and significantly correlated with longfin smelt abundance.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The proposed project includes initial operating criteria meant to ensure that effects on longfin smelt are less than significant, and is currently being examined as part of the CESA 2081 permitting process. Note that the preferred alternative (Alternative 4A, California WaterFix) does not include largescale habitat restoration. Regardless of the relationship between outflow and longfin smelt abundance, uncertainty remains about this relationship, e.g. what outflow is needed to benefit the species, when that outflow is needed, and the underlying mechanisms for the X2-abundance relationship; for a given outflow, the uncertainty in the abundance predictions is actually quite sizable, with differences between scenarios (e.g., preferred alternative and no action alternative) relatively small compared to the range of estimates around the mean. These uncertainties are documented in the EIR/EIS. Additionally, the Adaptive Management Program will be used to reduce this uncertainty and adjust operations as necessary. See also Master Response 33.</p>
1723	225	<p>Additional, more recent models should be used for projecting longfin smelt populations in futures with and without BDCP, because:</p> <p>The model used by BDCP does not incorporate any effect of previous population size; thus, any given X2 value always predicts the same longfin smelt abundance index, regardless of whether the previous (parental) generation had high abundance or low abundances. Models that incorporate historical longfin smelt population size (or "stock") have been developed. TBI/NRDC 2010 Exhibit 2; USFWS Progress Assessment April 3, 2013. These models show a significant effect of historical population size on current population size (i.e., models with both Delta outflow and recent population size predict current population size better than models with flow alone). Indeed, the Draft Plan claims to analyze BDCP effects on longfin</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis included in the EIR/EIS compares the abundance, based on Kimmerer (2009), of longfin smelt with and without the preferred alternative (and other alternatives). It does not estimate actual abundance. Additional examination of potential effects on longfin smelt is ongoing as part of the California WaterFix 2081 permitting, including consideration of the recent paper by Nobriga and Rosenfield (2016) that developed a model including stock size. The analysis included in the 2081 permitting focuses on an updated version of Kimmerer et al. (2009), but gives the same basic conclusion. The Nobriga and Rosenfield model does not provide as good a fit to the historic data as analyses based on X2 and changepoints. It is acknowledged that prior abundance appears to have some importance, but incorporation of change points</p>

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		smelt abundance using a model that incorporates stock, see Draft Plan at 5.C.0-5, but such a model is not present in the Effects Analysis or the DEIS/DEIR. The DEIS/DEIR should utilize one of the recent models that incorporates both flow and prior-abundance to estimate future abundance of longfin smelt. As a result of applying the very simple Kimmerer et al. (2009) relationships without accounting for the effect of current population sizes that are close to their historic lows, the DEIS/DEIR likely overestimates the size of future longfin smelt populations.	for clam invasion and the Pelagic Organism Decline results in abundance indices that are well predicted solely by winter-spring abundance and without explicit consideration of stock size. This was felt to be a reasonable basis for use of Kimmerer et al. (2009), and updates in the 2081 permitting.
1723	226	<p>Additional, more recent models should be used for projecting longfin smelt populations in futures with and without BDCP, because:</p> <p>The model will only predict population extinction when X2 is such that the equation solves for "y" (longfin smelt index value) = 0. Any X2 that is marginally below (better than) this critical threshold will predict retention of the population and, even if the critical value of X2 is reached in one generation, the equation will predict a "resurrection" of the population the next time X2 is better than the critical value (see issue #1 above). This is a critical flaw in a model that is being used to evaluate the conservation status of a population in the future as it is quite blind to the risk of persistently low populations and the fact that, if the longfin smelt population is locally extirpated, it will be very difficult or impossible to restore.</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative and response to comment 1723-225 regarding the longfin smelt analysis.
1723	227	<p>Additional, more recent models should be used for projecting longfin smelt populations in futures with and without BDCP, because:</p> <p>The Kimmerer et al. 2009 relationship accounts for two different flow-abundance relationships corresponding to periods pre- and post-1987; it is not clear which time period the analyses uses to project longfin smelt abundance into the future. However, there is evidence to indicate that a second decline in the flow-abundance relationship may have occurred, creating a third relationship from the early-2000's to the present. Thomson et al. 2010. Thus, the relationship between flow and abundance used in the DEIR/DEIS likely overstates the longfin smelt abundances that will result from Delta outflows under the BDCP.</p>	Please see response to comment 1723-225 regarding the longfin smelt analysis.
1723	228	The way the Draft Plan and DEIS/DEIR apply modeled Delta outflow results as inputs to the longfin smelt abundance-X2 relationship is inappropriate. The numerous inadequacies with the flow modeling employed by the Draft Plan and DEIS/DEIR are documented elsewhere in this comment letter. All of the biases and uncertainty associated with the Draft Plan and DEIR/DEIS flow model outputs are relevant here and many are magnified in the longfin smelt analysis by the addition of uncertainties and biases inherent in the approach to modeling longfin smelt impacts. And as discussed in our comments on the flow modeling, it is not clear that the HOS flows are likely to actually occur. [Footnote 59: In addition, the Projects' frequent practice of requesting and receiving Temporary Urgency Changes to Delta outflow requirements under Dry and Critically Dry conditions (such as those that were requested and granted in WY 2014) strongly suggests that flow conditions projected in the Draft Plan and DEIS/DEIR for Dry and Critically Dry years overestimate the actual amount of flow that will occur in some of those years and that the analysis thus overestimates the indices of longfin smelt during drier years.]	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The HOS is not a component of the preferred alternative. The proposed project (Alternative 4A) includes initial operating criteria that result in less than significant impacts to longfin smelt. Also see response to comment 1723-225.</p>
1723	229	It is not clear that the analyses reflect accurately the Kimmerer et al. 2009 methodology or that the analyses reflect the Draft Plan's own conceptual model relating Delta outflows (and/or X2) on longfin smelt abundance. The Kimmerer et al. 2009 model uses X2 values averaged over the January-June period. But the Draft Plan states its belief that flows in the	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The text regarding an X2 averaging period of December-May was incorrect and is not included in the</p>

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		<p>March-May period affect longfin smelt abundance. Draft Plan at 5.5.2-8. But then the DEIS/DEIR states, "Relationships between December through May X2 position and log longfin smelt abundance ... were used to determine how the changes in winter-spring X2 position described above might influence longfin smelt abundance the following fall." DEIS/DEIR at 11-1305. There is no explanation for the mismatch of months used in the analysis and those used by Kimmerer et al. 2009 or those assumed to be important in the BDCP conceptual model.</p>	<p>FEIR/EIS; the January-June averaging period is mentioned for Alternative 1A, which the other alternatives cross-reference. The Draft BDCP referenced an unpublished analysis suggesting March-May as being a period of importance, which is also being considered as part of the CESA 2081 permitting process for the preferred alternative (Alternative 4A, California WaterFix).</p>
1723	230	<p>Using the average X2 position from December through May means that the analysis ignores variations within that 6-month period as they are eliminated by averaging. In 2013 USFWS stated that, "The effects analysis did not use the best available longfin smelt statistical models to support its net effects conclusion." USFWS 2013 Progress Assessment at 18. It then quotes the USFWS 2012 Red Flags as follows:</p> <p>"The older regression models that were used in the effects analysis are published, but can easily be shown not to perform as well as the newer models. The older models also average the flow influence on longfin smelt across half a calendar year, which likely affects conclusions about the reduction in springtime outflow seen in modeling outputs for the Preliminary Proposal."</p> <p>(Id.)</p> <p>Kimmerer et al. 2009 averaged X2 values over winter-spring because that is generally when longfin smelt are spawning and rearing in or near the Delta; they had no a priori or statistical reason to consider smaller time periods for X2, and they were not trying to model differential impacts to longfin smelt resulting from alterations to the historical hydrological relationships among months in the winter and spring (flows in those months are strongly correlated). However, for many of the potential mechanisms by which X2 might control longfin smelt productivity (population growth or decline; see Kimmerer 2002b), changes in X2 or flow within the winter-spring period would be as or more important than the "average" value for the whole period.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see response to comment 1723-225 regarding the longfin smelt analysis.</p>
1723	231	<p>Kimmerer et al. 2009 do not suggest and certainly do not demonstrate that mean X2 position for the 6-month winter-spring period is the best indicator of flow related effects on longfin smelt abundance -- their results could also mean that a critical flow related effects occur in a shorter time window within the January-June time frame or that minimum or maximum flows in that period controlled the population response. For example, the Draft Plan suggests that March-May may represent the critical period for flows -- so why not study flows and X2 in the March-May period? Even within that smaller time window, the analyses should focus on the potential for extreme flows (high or low) and corresponding X2's to drive outcomes for longfin smelt rather than the mean flow. It is at least as likely that the largest or smallest value of X2 in the winter-spring drives the population response of longfin smelt as it is that the mean value of X2 controls population levels.</p>	<p>Please see response to comment 1723-225 regarding the longfin smelt analysis.</p>
1723	232	<p>It is possible that flows (or X2) in a narrower time window than January-June have the greatest influence on the population, as more recent models suggest. Just because Kimmerer 2009 uses a six month average does not mean that average flows over that entire period are driving the effect. Flows in a narrower window, or maximum or minimum flows during that period, are likely to be the variable that longfin smelt populations respond to. The Draft Plan and DEIS/DEIR should be aware of these possibilities (we and others have made this comment before) and should present, in addition to effects based on mean</p>	<p>Please see response to comment 1723-225 regarding the longfin smelt analysis.</p>

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		<p>winter-spring flow, estimates of effect on the longfin smelt population if flows in a narrower window or maximum or minimum flows during winter-spring actually drive the population. If mean X2 is not the most relevant flow variable for predicting longfin smelt population (as opposed to a maximum or minimum) or the most important time frame for X2 position is a subset of the months used in the Kimmerer et al. 2009 relationship, then the usefulness of the Kimmerer et al. 2009 relationship for predicting longfin smelt populations in the future would be reduced in a situation where the timing of flows across months is different than it has been historically (as would occur under BDCP and climate change). Since extreme values (high or low X2) may be what actually controls the overall pattern described by Kimmerer et al. 2009 and, because the BDCP will change the relative distribution of those flows in months within the Jan-June period (see DEIS/DEIR at Table 11-4-7, Table 11-4-9), the Kimmerer et al. 2009 relationship may not be the most sensitive to the real effects on longfin smelt populations represented by the altered hydrograph anticipated under the Draft Plan and DEIS/DEIR. This is not the first time we have warned that BDCP draft documents: "...presents the flow-abundance relationships for the longfin smelt population in this Estuary in a way that will tend to lead to underestimation of potential impacts to this species." Memorandum to J. Meral from The Bay Institute, Environmental Defense Fund, and Contra Costa Water District re: Review of Appendices C and D December 21, 2011. Fortunately, having calculated X2 for January-June and, using the Kimmerer et al. relationship, the associated longfin smelt abundance index for each year in the record, the Effects Analysis and the DEIS/DEIR must have the data necessary to calculate the alternate outputs we suggest (i.e. maximum and minimum longfin smelt estimates based on max and min X2 for any month in the January-June period). We have requested this analytical approach before. The Bay Institute, 2013 comments on Administrative Draft Appendices C and D, at 7-8.</p>	
1723	233	<p>Even with the flawed modeling biased towards more positive outcomes, the DEIS/DEIR projects substantial declines in the abundance of longfin smelt from recent unacceptably low levels under most alternatives.</p> <p>Relative to longfin smelt abundances seen in recent years (abundances that are lower than those that warranted listing under the California and federal Endangered Species Acts), the Draft Plan and DEIS/DEIR project significant declines in longfin smelt abundance in the future. The alleged benefits to longfin smelt abundance claimed in the Draft Plan (see Table 5.5.2-2) and DEIS/DEIR (see Table 11-4-8.) are meager and result reflect only a comparison to a modeled future baseline in which spring outflows (and longfin smelt) decline significantly.</p>	<p>For more information regarding CEQA and NEPA baselines, see Master Response 1. Also, please see the response to comment 1723-225 regarding the longfin smelt analysis.</p>
1723	234	<p>With respect to longfin smelt abundance, the relevant question is: "Will the longfin smelt population increase (display higher abundance indices) from current levels to levels that are consistent with conservation of this species in the Plan Area?" The Draft Plan Technical Appendix 5C addresses these questions in tables such as 5C.5.4-39 where it compares EBC2 modelled in the present day ("EBC2") to conditions under the BDCP in the late long term (ESO_LLT). This comparison shows that longfin smelt populations are expected to decline 22%-33% from current levels (as predicted by the Draft Plan's modification of the Kimmerer et al. 2009 relationship). See Draft Plan Appendix 5C at Table 5C.5.4-39. Table 5C.5.4-41 and Table 5C.5.4-43 provide a similar comparison, for two different sampling programs, and they show slightly larger declines. Thus, the BDCP's Technical Appendix anticipates very significant proportional declines in longfin smelt abundance over the BDCP permit term. The CEQA/NEPA conclusions in AQUA-23 and AQUA-24 that there will not be significant impacts are not supported by the substantial evidence, and the modeling shows that Alternative 4</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see response to comment 1723-225 regarding the longfin smelt analysis.</p>

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		and other alternatives will cause significant impacts and cumulatively significant impacts.	
1723	235	<p>The DEIS/DEIR (Table 11-4-8) and Draft Plan (Table 5.5.2-2) rely on a misleading and erroneous comparisons to claim that BDCP will improve longfin smelt abundance. In addition to showing the large relative and absolute declines in longfin smelt abundance projected to arise</p> <p>under the Draft Plan, these tables present a comparison of ESO_LLT (evaluated starting operations-late long term) to EBC2_LLT (existing biological conditions 2-late long term), which suggests that conditions under the BDCP will be marginally better than under current operations applied to modeled future conditions. It is unclear whether any of the reported differences are statistically significant because the error bounds of the Draft Plan or DEIS/DEIR estimates (i.e., the variance associated with the Kimmerer et al. 2009 model combined with those related to modeled Delta outflow) are not reported. This comparison is misleading because it assumes that operations do not adapt to climate change. However, given that these assumptions regarding changing environmental conditions lead to projections of very significant declines in longfin smelt abundance, the Draft Plan should not assume that either current operating rules or those envisioned in the BDCP alternative will be permissible. So, while the modeling seems to indicate some very small benefits to longfin smelt abundance of BDCP operations compared to status quo operations, there is no reason to expect that either operation will result in conservation or restoration of longfin smelt.</p> <p>There are feasible measures to address anticipated baseline freshwater flow rates that are under control of the Projects, in order to avoid or reduce the negative impacts that threaten the continued existence of covered species. We -- and many other agency and independent scientific reviewers -- have repeatedly recommended substantial increases in Delta outflow to avoid these predicted outcomes. For instance, Alternative 8 in the DEIS/DEIR includes increases in spring outflow as recommended by the SWRCB.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Further exploration of the error bounds on relative abundance estimates between scenarios has been provided as part of the CESA 2081 permit application. In order to address the potential for negative effects of the preferred alternative (Alternative 4A, California WaterFix), DWR and DFW have collaborated to propose outflow criteria for longfin smelt that address issues with changing climate and how outflow could change in the future.</p>
1723	236	<p>With regard to its own productivity objectives, which are inadequate (see above), the relevant question for evaluating the Draft Plan's progress towards attaining the co-equal goals is: "Will abundance relative to winter-spring hydrology (i.e., flow corrected abundance, or "productivity") increase to levels consistent with conservation and restoration of the species?" The DEIS/DEIR does not compare outcomes projected under the Plan to those targeted by its productivity objectives. And, because the productivity objectives are "flow corrected," the DEIS/DEIR has not developed information that would allow evaluation of whether non-flow related activities (such as CM4, CM6, etc.) will produce improvements in flow corrected abundance. However, it is abundantly clear from the results in the Draft Plan's Technical Appendix and Effects Analysis that the BDCP is not likely to "restore" flow corrected abundance to 1980-2011 levels (the Conservation Strategy's inadequate target) or 1967-1984 levels (the USFWS 1995 Draft Recovery Plan target) because absolute abundances are predicted to decline substantially from current levels (which are already below those implied by the productivity objective) in each water-year type category. Thus, even the flawed and biased analyses in the DEIS/DEIR and Draft Plan demonstrate that BDCP likely will not attain critical conservation targets for this covered species.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The new preferred alternative, 4A, will be subject to incidental take authorization under CESA Section 2081(b); therefore it does not contain biological goals and objectives related to longfin smelt.</p>
1723	237	<p>Draft Plan and DEIS/DEIR rely on "average" results for longfin smelt populations in different year types, which understates likely environmental impacts to the species</p> <p>Similarly, the DEIS/DEIR rely on "average" projected flow conditions (and changes in flow</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment suggests that averaging across months and water year types misleading; however, this type of</p>

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		<p>conditions) to predict longfin smelt outcomes in the future. The analysis does incorporate reasonably foreseeable changes in the frequency of year-types experienced by the longfin smelt or magnitude of flows in different year types, in the future. The use of average flows is particularly inappropriate for analyses of semelparous organisms with discrete generations; longfin smelt will respond to actual conditions within a given year, not to the long-term average, so if several low outflow years occur in sequence, then population will decline and may be extirpated. The use of the long-term average conditions to gauge longfin smelt response is also misleading because the average depends on the frequency distribution of different hydrological year types (and conditions in each year type) and this distribution is likely to change (i.e. due to normal or human induced climate changes).</p>	<p>results presentation is necessary as a result of the relatively broad-scale, planning-level nature of the CalSim-based analysis. Regarding uncertainty about the effects of freshwater flow on longfin smelt, the EIR/EIS does not describe the flow-abundance relationship as an uncertainty; rather, the document describes that it is unknown what the mechanisms behind the correlation are (i.e., there is uncertainty in the mechanisms); investigation of these mechanisms and a proposal to adaptively manage operations accordingly is described. The best available relationship is used for the assessment, i.e., the analysis based on Kimmerer et al. (2009). All analyses include this relationship, and give the results presented in Chapter 11 of the Final EIR/EIS, which lead to conclusions regarding significance of impacts and mitigation measures as described therein.</p>
1723	238	<p>Like delta smelt, longfin smelt are believed to be semelparous (die soon after spawning the first time) and have largely distinct spawning classes. This means that the population response to any set of annual conditions is not tempered by overlapping generations or the capacity for mature fish to delay spawning in bad years. Thus, for the BDCP analysis, conditions in individual years and the frequency of good and bad conditions are more important than are "average" conditions over many years. The Draft Plan and DEIS/DEIR's presentation of "average" change in the population (depicted under the heading "All") is deceptive and confusing in a way that paints an inappropriately optimistic view of aggregate effects on longfin smelt populations. For example, if conditions in a particular year were such that a population experienced a 100% decline ("extinction"), it would not matter what the "average" condition was in a given year type or across all year types. The Draft Plan and DEIS/DEIR should present results and comparisons between scenarios that anticipate a series of years with poor environmental conditions in a row (as in the 1987-1994 drought or the 2012-current drought) because those are conditions that the covered species actually experience; at a minimum, the Draft Plan and DEIS/DEIR should compare the worst case conditions in each year-type between modeled scenarios -- differences in the worse-case conditions will better reflect the likelihood of conserving the population in the Plan Area. As a result of modeling "average" conditions, the Draft Plan likely understates the potential environmental impacts to the species, and overstates likely abundance.</p>	<p>The commenter makes a good point, in principle, regarding use of average conditions with respect to underestimating probability of extinction. However, the relationships of longfin smelt abundance and predicted variables such as flow are not well enough understood to predict probability of extinction with any confidence regardless of whether or not years are averaged. With respect to outcomes other than extinction, such as abundance, modeling average conditions should present no issues, particularly given the substantial inherent uncertainties.</p>
1723	239	<p>The Draft Plan misrepresents its likely impact on freshwater flow rates in a manner similar to those made in its presentation of longfin smelt population impacts. In addition to the fact that "average" conditions are not as relevant to conservation efforts as the frequency and magnitude of extreme conditions (see above), presenting flows in the "average" year assumes some distribution of water year types (here, flow conditions) affecting the population which may or may not occur -- if the future brings a long series of "dry" years, all that will matter is how the fish populations perform under BDCP during "dry" years compared to how they would perform in "dry" years without a BDCP. With regard to Delta outflow, the Plan assumes that Wet, Above Normal, Below Normal, Dry, and Critical years types occur in 32%, 15%, 17%, 22%, and 15% of years respectively. Draft Plan at 5.2-16. If these conditions do not hold in the future, then the "average" result of that hydrological distribution will not occur either. This could occur under climate change, see Null and Viers 2013, and would also occur when/if human water management changes the frequency or "wetness", as experienced by the Bay-Delta ecosystem, of different year types. For example, as we discuss with respect to cumulative impacts, if water users develop greater water storage capacity (e.g., greater reservoir capacity, on or off-river, or greater groundwater storage) then humans will capture more of the available runoff in wetter year types. This will make the wetter year types less frequent and likely make all year types less wet from the perspective of organisms and processes that rely on Delta outflow.</p>	<p>Please see response to comment 1723-237 regarding longfin smelt and flow.</p>

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1723	240	<p>The Draft Plan and operational alternatives modeled in the DEIS/DEIR clearly produce low flows in many years. Even under the "High Outflow Scenario", outflows lower than the status quo are expected in drier years. These are years when the longfin smelt population is particularly vulnerable. See Rosenfield 2010. According to our calculations, the "low outflow scenario" (LOS) will result in Delta outflows during March through May that are lower than recent historic (1970-2003) outflows in approximately 70% of years. The "high outflow scenario" (HOS) will only generate Delta outflows that are higher than recent historic flows (between Jan and June) during the Below Normal Year-type in the late long term. All other year-type average display a 0.4% to 1.8% decrease in NDO compared to the No Action Alternative. As a result of these projected declines (or minor increases) in Delta outflow, longfin smelt abundances are projected to decline significantly in the early and late-long term of the BDCP compared to current conditions.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As shown in the Table C-7-1-20 under Appendix 5A Section C, Modeling Results, of the Draft BDCP EIR/EIS, Delta outflow averaged over March through May under Alternative 4 H4 would be higher or similar than under the No Action Alternative in the 30% to 90% exceedance intervals.</p> <p>The HOS is not a component of the preferred alternative. The proposed project (Alternative 4A) includes initial operating criteria that result in less than significant impacts to longfin smelt. Also see response to comment 1723-225.</p>
1723	241	<p>The Draft Plan's presentation of projected outcomes for longfin smelt abundance and productivity is confusing and prevents the average reader from comprehending the impact of BDCP.</p> <p>The Draft Plan creates unnecessary confusion by presenting model outcomes based on input of three different longfin smelt sampling programs. The Effects Analysis technical appendix alone presents at least 11 different tables showing projected changes in longfin smelt abundance. The Draft Plan's technical appendix (Appendix 5.C.) demonstrates that each of the three longfin smelt sampling programs it employs to model projected outcomes produces nearly the same results. The most relevant sampling program for projecting the relationship between longfin smelt abundance and X2 is the Fall Midwater Trawl (FMWT) sampling program as (a) that is data set used by Kimmerer et al. 2009 to develop the model the Draft Plan relies on for forecasting longfin smelt populations; (b) the FMWT program samples intensively in the areas</p> <p>most immediately affected by BDCP, whereas the other sampling programs sample the entire Bay Estuary diffusely; and (c) the FMWT sampling program data series is substantially longer than the record for the other sampling programs. Kimmerer et al. 2009 and Rosenfield and Baxter 2007 both found substantial concurrence among the different data sets of longfin smelt sampling that are used in the Draft Plan and DEIS/DEIR analyses. Thus, while presentation of separate results for three different sampling programs compounds the confusion for readers, it is not clear that any additional information is gained by presenting separate analysis of the data from three different longfin smelt sampling programs.</p> <p>Furthermore, the projected outcomes of BDCP on longfin smelt abundance presented in the DEIS/DEIR do not match those found in the Draft Plan's technical appendix. The DEIS/DEIR summary is inconsistent with the Draft Plan's associated technical appendix. Compare DEIS/DEIR at 11-1308 (Table 11-4-8) with Draft Plan at 5C.5.4-104 to -109. Many of the results presented in the DEIS/DEIR are not displayed in the technical appendix, and the DEIS/DEIR does not reveal how it arrived at estimates that differ from those found in the technical appendix; thus, it is challenging to review and compare the two documents and to evaluate the DEIS/DEIR.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis in the EIR/EIS in some cases relied on the information available in the BDCP but only after independently evaluating the information. In some instances, different approaches to analyze effects were used. The best available relationship between longfin smelt abundance and changes in water facility operations is based on Kimmerer et al. (2009), the application of which shows that outflow in January through June correlates to longfin smelt abundance. As such, the X2-longfin smelt abundance relationship provided by Kimmerer et al. (2009) was used to evaluate the effects of the alternatives on longfin smelt, following the historical observation that lower X2 (farther downstream) correlates with increased recruitment (represented by abundance indices in trawl surveys), although it is not understood if or how this would affect spawning, egg incubation, and/or rearing longfin smelt.</p>
1723	242	<p>The Draft Plan is unlikely to achieve the entrainment objective for longfin smelt, and entrainment will continue to harm the species. The presentation of results is confusing, biased towards positive outcomes, and internally inconsistent.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter states that the conclusion of no significant impacts in AQUA-21 in the DEIR/DEIS is not</p>

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		<p>The presentation of entrainment impacts on longfin smelt within and across the Draft Plan's Effects Analysis, Entrainment Appendix (Appendix 5B), DEIS/DEIR, and the DEIS/DEIR Summary of Effects are confused and contradictory, and the conclusion of no significant impacts (AQUA-21) is not scientifically justified. As described above, the Draft Plan clearly identifies an objective intended to reduce entrainment of longfin smelt (though it is not written in a manner that will necessarily accomplish such a reduction) and to distribute entrainment evenly across the winter-spring in order to eliminate differential impacts to longfin smelt life history variants (though, again, it is inadequate to affect that intent). Contrary to the intent of the entrainment-related objective for longfin smelt, entrainment of longfin smelt is projected to remain unchanged or even increase during dry years, when most longfin smelt entrainment occurs. For example, during Dry and Critically Dry water year types, entrainment of juvenile longfin smelt is expected to increase or remain unchanged during the early and late long term in April. Draft Plan at Table 5.B.6-163 and Table 5.B.6-164. The Draft Plan acknowledges that during Dry water year types, when most entrainment of juvenile longfin smelt would occur, entrainment loss under ESO (evaluated starting operations) compared to current conditions would increase by 4% in the early long term. Draft Plan at 5.B-231.</p>	<p>scientifically justified. Appendix 5B of the BDCP details the methods used, including the assumptions and limitation of those methods, to make the entrainment estimates. The conclusions in the EIR/EIS depend on the entrainment estimates, which themselves are supported by the best available scientific information. For Alternative 4A, the results show a reduction in entrainment relative to both existing conditions and the NAA_ELT.</p>
1723	243	<p>Despite the Effects Analysis' findings that juvenile longfin smelt entrainment will increase from current levels in drier years (years when the population already suffers poor recruitment) during the early long-term, it concludes that the BDCP will generate a "low" positive effect on juvenile longfin smelt entrainment and "very low" positive effects on larval longfin smelt. Draft Plan at Figure 5.5.2-5. The DEIS/DEIR does not convey changes in entrainment rates in the early long term, see, e.g., DEIS/DEIR at Table 11-4-5, but increased entrainment in drier years is a negative effect in the early long term. Given the precarious state of the longfin smelt population, this may translate to a long-term effect that impacts any anticipated benefit in the late long term. Again, we note that average changes in entrainment rates modeled over many years are immaterial to fish that are semelparous (have only one chance to reproduce) and live for only two years -- multiple generations of longfin smelt may experience only the higher entrainment expected under drier years and an extended period (i.e. a drought) of such high entrainment could do significant and possibly irreparable damage to the population.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Final EIR/EIS only shows one time period where there is an increase in longfin smelt entrainment and that is for juveniles during dry years when compared to existing conditions. When compared to the No Action Alternative_ELT, there is a decrease in dry years. For all other time periods, including critical and below normal years, there is a projected decrease in entrainment of longfin smelt juveniles and adults. Please see Table 11-4A-5 in Chapter 11 of the Final EIR/EIS for more information.</p>
1723	244	<p>The Draft Plan does not directly compare the predicted changes in longfin smelt entrainment to the Draft Plan objective of limiting longfin smelt entrainment. However, neither the Effects Analysis nor the DEIS/DEIR indicate that longfin smelt entrainment will be reduced to levels less than 5% of the population per year, as required by objective LFSM1.2. Entrainment rates for each life stage of longfin smelt vary substantially based on water-year type; it is well-known that entrainment rates for this species increase dramatically in drier year types and can be negligible in wetter year types. Sommer 2007; CDFW 2009; Grimaldo et al. 2009; Rosenfield 2010. Entrainment rates also vary based on the assumed distribution of longfin smelt spawning (when more longfin spawn closer to the pumps, more of the subsequent larval population is entrained). For example, the Effects Analysis projects that in drier year types, if 15% of longfin smelt spawn in the South Delta, then up to 19.1% of the larval longfin smelt population may be entrained under BDCP operations. Under these conditions, projected entrainment of larval longfin smelt exceeds the 5% total entrainment maximum set in objective LFSM1.2 in more than one quarter of the years analyzed in the Early Long Term period. Draft Plan at Table 5.B.6-151. This analysis does not account for cumulative effects of entraining other life history stages (juvenile or adult). [Footnote 60: Modeling of the entrainment risk for longfin smelt and other species is highly reliant on the modeling of Delta flows and in-Delta hydrodynamics and is thus subject</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The preferred alternative, Alternative 4A, does not include the BDCP biological goals and objectives for longfin smelt. The analysis in the EIR/EIS compares the proposed project to existing conditions (CEQA) and the No Action Alternative (NEPA), which for this project would be during the Early Long-Term time period when the project is operational.</p> <p>Entrainment and entrainment-related predation of all life stages of longfin smelt at the south Delta facilities would be reduced under Alternative 4A compared to Existing Conditions. Particle entrainment, representing larval longfin smelt, was lower under Alternative 4A for both drier and wetter starting distributions (refer to BDCP Appendix 5.B, Entrainment, for further details). Entrainment loss would be substantially lower for both juvenile (32% less) and adult longfin smelt (51% less) (Table 11-4A-5). Entrainment and entrainment-related predation of juvenile and adult longfin smelt would be reduced substantially under Alternative 4A compared to NAA_ELT across all water years (Table 11-4A-5).</p>

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		<p>to the quality of the assumptions used to perform that modeling and the uncertainty inherent in such modeling. Flaws and high uncertainties associated with the BDCP's hydrological and hydrodynamic modeling are described, at length, in our comments. Here, it is important that the reader understand that the modeled entrainment risks are extremely uncertain and may be higher than modeled in some cases and that the modeling itself lends itself to an underestimation of entrainment risks.]</p> <p>These findings reveal that:</p> <ul style="list-style-type: none"> - entrainment of juvenile longfin smelt is expected to be quite high now under certain conditions (the BDCP cannot achieve large reductions in longfin smelt entrainment if entrainment is not high to begin with) - entrainment is expected to increase in certain year types under BDCP operations in the early long term; and, - the risk of entrainment will not be "evenly distributed over the adult migration and larval-juvenile rearing periods" as required by objective LFSM1.2. 	
1723	245	<p>The DEIS/DEIR treatment of entrainment as a stressor to longfin smelt is inconsistent and internally contradictory. For example, in reporting higher entrainment levels that would be expected under Alternative 1A, the DEIS/DEIR declares:</p> <p>"The salvage density approach for March-June entrainment suggested that overall entrainment loss would be similar or slightly increased (by up to 25%) under Alternative 1A. Although there were considerable increases in entrainment rate (over 100% in some cases) under Alternative 1A in below-normal years, the actual number of fish involved were very low... Higher numbers of entrained fish were estimated in dry water years. In these years, entrainment under alternative 1A was 14-44% higher than NAA. In critical years, there were modest decreases of 5-20% in entrainment under Alternative 1A relative to NAA."</p> <p>(DEIS/DEIR at 11-200.)</p> <p>The DEIS/DER does not explain why an increase of "up to 25%" in longfin smelt entrainment would be considered a "slight" increase, or why, in the same paragraph a smaller decrease in entrainment of 5-20% would be considered a "modest" improvement (which implies an impact that is greater than "slight"). It is also not clear how the 25% increase in entrainment statement squares with those that follow, predicting increases in entrainment of "over 100%" or "14-44%" in some cases. Rather than acknowledge and address the failure of Alternative 1 operations to reduce entrainment as the Draft Plan intends, the DEIS/DEIR undermines the rationale for declaring that objective at all, stating: "Entrainment at the SWP and CVP facilities is not believed to be an important stressor influencing survival of longfin smelt larvae, as they are generally encountered in substantial numbers at the south Delta facilities only in dry years (approximately one-third of all water years). Consequently the population-level impact of this stressor on longfin smelt larvae is believed to be low." DEIS/DEIR at 11-200. [Footnote 61: It is entirely unclear how the DEIS/DEIR can downplay the importance of entrainment as an impact based on the frequency of encountering "substantial numbers" of larval longfin smelt at the south Delta facilities since larval smelt were not identified (much less enumerated) at the salvage facilities prior to 2008. CDFW 2009 Incidental Take Permit for the SWP at 6.]</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Alternative 1A is expected to decrease the entrainment of adult and larval longfin smelt and increase the entrainment of juvenile longfin smelt at the south Delta facilities (see Tables 11-1A-7 and 11-1A-7 in the Final EIR/EIS), although real time management could reduce the extent of any entrainment. If the longfin smelt population recovers, overall take at the south Delta facilities could increase, even though the proportional loss may be lower under Alternative 1A than the NAA. It is concluded that these changes in longfin smelt entrainment would be adverse under Alternative 1A as a result of increased juvenile entrainment, based on the PTM method used.</p> <p>The CEQA conclusion for Alternative 1A states: "The overall impact of water operations under Alternative 1A on entrainment at SWP/CVP facilities is considered significant because of increased dry-year juvenile entrainment of longfin smelt in the south Delta compared to existing conditions, although when compared to the NAA, differences are minimal (-2% across all water years). Management by the Real-Time Response Team would help reduce the extent of entrainment losses under Alternative 1A, especially in drier years, but not necessarily to a less-than-significant level. As a result, this impact would be significant and unavoidable."</p> <p>For additional information regarding significant and unavoidable impacts, please see Master Response 10.</p>

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1723	246	The DEIS/DEIR goes on to state that, "Based on the limited potential for a population-level effect on longfin smelt and the minor to moderate change in the entrainment expected under Alternative 1A, the effect of entrainment would not substantially change for juvenile longfin smelt." DEIS/DEIR at 11-200 (emphasis added). This analysis of potential negative effects for one set of BDCP operations (Alternative 1) stands in contrast to its interpretation of alleged positive effects for another operational alternative 4. Although the proportional magnitude of positive effects are similar, the positive effects anticipated under Alternative 4 operations are judged to be "substantial," DEIS/DEIR at 11-1304, while the negative effects under Alternative 1 are termed "low." The DEIS/DEIR rationale for downplaying negative effects to longfin smelt entrainment under Alternative 1 exemplifies its flawed approach to evaluating impacts. The DEIS/DEIR argues that the anticipated negative entrainment effects to longfin smelt are minor because such impacts "only" occur in about 1 of every 3 years. This is scientifically unjustified. As we have described before, longfin smelt are short-lived (~2 years) and semelparous; as a result the longfin smelt population is very sensitive to conditions that occur in individual years and less sensitive to "average" conditions. Thus, an action that increases a known impact to the population by 14-100% (the range of increases identified in the DEIS/DEIR) should be modified, even if the effect occurs "only" in a fraction of years. Moreover, the impact of high entrainment rates on longfin smelt in drier years is important because longfin smelt experience lower recruitment in dry years; to quote the CDFW's incidental take permit for the SWP, "the mortality associated with entrainment would be highest when the population already faces adverse recruitment conditions attributable to low outflow." CDFW 2009 at 7.	Please see response to comment 1723-238 regarding longfin smelt.
1723	247	In general, the Draft Plan and DEIS/DEIR take the inaccurate position that the impact of entrainment on longfin smelt have been reduced in recent years, though the Entrainment Appendix acknowledges that longfin smelt salvage has been high "in some years." Draft Plan at 5.B-1. The Draft Plan and DEIS/DEIR presumably refer to implementation of SWP/CVP export controls under the Biological Opinion for delta smelt as reducing salvage of longfin smelt. Yet, entrainment is a known stressor on, and threat to the Bay-Delta's longfin smelt population. Rosenfield 2010; CDFW 2009. In addition, the documents' assumption regarding recent reductions in this impact are not supported by recent entrainment levels; relative to the measured index of longfin smelt abundance, entrainment rates of longfin smelt have been higher since the species' 2009 listing under the state Endangered Species Act than they were before the listing. The Bay Institute and Center for Biological Diversity letter to C. Bonham, CDFW April 27, 2012; see The Bay Institute, Center for Biological Diversity, NRDC, and Defenders of Wildlife letter to C. Bonham, CDFW July 10, 2013.	The current diminished population status of longfin smelt is acknowledged and is described in Section 11A.2 of Appendix 11A of the FEIR/EIS. Further investigation of Longfin Smelt entrainment potential has been undertaken as part of the DFW 2081 permitting process for the California WaterFix, including salvage assessment using the relationship from Grimaldo et al. (2009). Additional examination of potential effects on longfin smelt is ongoing as part of the California WaterFix 2081 permitting, including consideration of Nobriga and Rosenfield (2016). The analysis focuses on an updated version of Kimmerer et al. (2009), but gives the same basic conclusion. The Nobriga and Rosenfield model does not provide as good a fit to the historic data as analyses based on X2 and changepoints. It is acknowledged that prior abundance appears to have some importance, but incorporation of change points for clam invasion and the Pelagic Organism Decline results in abundance indices that are well predicted solely by winter-spring abundance and without explicit consideration of stock size. This was felt to be a reasonable basis for use of Kimmerer et al. (2009), and updates in the 2081 permitting.
1723	248	The Draft Plan fails to adequately model likely entrainment rates, underestimating likely entrainment. The Effects Analysis obscures the impact of entrainment on longfin smelt by reporting longfin smelt entrainment rates separately for different life stages: larval, juvenile, and adult. Even if data availability requires different modeling approaches for different life stages, there is only one longfin smelt population and thus, the effects of stressors on multiple life stages must be summarized into a single cumulative impact. A summation of this type would be aided by a numerical life cycle model for the species, but such a model is not required to accurately report the relative impacts of entrainment (or other stressors) on the population as a whole. Also, in a population that is not limited by density-dependent interactions, the proportional loss of any life stage would be directly translated to subsequent life stages and eventual egg production.	The EIR/EIS is organized in a typical fashion for large CEQA and NEPA documents and was set up to allow easy interpretation by readers. The effects on longfin smelt entrainment are presented in Impact AQUA-21 by life stage and source of entrainment affected by the alternatives (North Delta intakes, south Delta facilities, and SWP North Bay Aqueduct). The results of all of this are summarized and a determination is provided.

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		<p>Here again, the DEIS/DEIR applies a different standard of impact when results appear to favor the BDCP alternative. When the DEIS/DEIR asserts net benefits of reduced adult entrainment, it no longer questions whether entrainment is a meaningful stressor on the population. See DEIS/DEIR at 11-201.</p>	
1723	249	<p>The Draft Plan entrainment index and DEIS/DEIR fail to use known relationships between OMR (Old and Middle River) flow rates and longfin smelt entrainment. Entrainment rates of longfin smelt and other pelagic fish species are known to correlate with impaired hydrodynamic patterns in the South Delta caused by the relationship between Delta export rates and Delta outflows. CDFW 2009; Rosenfield 2010. In particular, entrainment of longfin smelt and other species is significantly and negatively correlated with flow rates in the Old River and Middle River distributaries of the San Joaquin River; entrainment rates accelerate rapidly as Old and Middle River (OMR) flows become increasingly negative (flow towards the South Delta export facilities on a tidally averaged basis). Grimaldo et al. 2009. The Draft Plan fails to use OMR as an indicator of entrainment risk despite this known relationship. See Draft Plan at Table 5B.5-2. The Draft Plan's analysis of OMR flow rates under the BDCP indicate that they will be nearly unchanged or more negative in all year-types during April and May in both the Early Long Term, see Draft Plan at Figures 5B.4-15 to 4-19, and Late Long Term, see Draft Plan at Figures 5B.4-20 to 4-24. These are the months in which longfin smelt are most susceptible to entrainment. Rosenfield 2010. As a result, the Draft Plan fails to accurately analyze a potentially significant impact and/or the ability or failure of the BDCP to alleviate a known, periodic stressor on the longfin smelt population.</p>	<p>Further investigation of Longfin Smelt entrainment potential has been undertaken as part of the DFW 2081 permitting process for the California WaterFix, including salvage assessment using the relationship from Grimaldo et al. (2009).</p>
1723	250	<p>Draft Plan objectives for Chinook salmon and steelhead populations are inadequate. The proposed objectives are not consistent with the CVPIA/AFRP, ESA, and other laws.</p> <p>Unfortunately, the Draft Plan's objectives for Chinook salmon and steelhead productivity are inadequate. The Draft Plan sets thresholds for Chinook salmon and steelhead survival based on population growth rates necessary to attain Chinook salmon and steelhead abundance targets within 40-50 years after BDCP is adopted. Draft Plan Appendix 3G. There are at least two problems with setting survival rate objectives as proposed in the technical appendix. First, there is no scientific justification or rationale for survival rates that produce such anemic growth rates for Chinook salmon; Chinook salmon typically display much higher freshwater survival rates than are described in the Appendix, particularly in the first half of the BDCP permit term. Quinn 2005; Healy 1995; Bradford 1995. Thus, setting the date for attaining abundance targets 40-50 year in the future is arbitrary and inadequate.</p> <p>Second, the abundance targets the Draft Plan uses to set growth rate (and thus, through-Delta survival) are not those specified by the CVPIA Anadromous Fish Restoration Program (AFRP) or the NMFS 2014 Final Recovery Plan for Central Valley salmonids (or for that matter, in the 2009 Draft Recovery Plan). For example, the BDCP Draft Plan identifies a global goal (a target to be attained by restoration efforts throughout this fish's life cycle, including upstream spawning areas, the BDCP Plan Area, and the ocean) for winter-run Chinook salmon escapement of 23,800 fish. However, this is a small fraction of the AFRP target for this species (110,000 2-yr+ fish in the ocean). AFRP 2001, Appendix B at B-1. [Footnote 62: Although escapement (the BDCP metric) is always lower than production (the AFRP metric) because fish die of natural causes and human fishing post-"production," the discrepancy either assumes an unreasonably high harvest rate (the California commercial fishing season is currently timed to minimize and avoid fishing-related mortality to winter-run Chinook salmon) or non-attainment of the AFRP target for winter-run Chinook</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p> <p>See Master Response 5 regarding BDCP Conservation Measures.</p>

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		<p>salmon.] Setting survival rates based on the growth rates needed to attain an inadequate and arbitrary abundance target over an inadequate and arbitrarily long timeframe is unacceptable. Similarly, the Draft Plan's target for Sacramento River steelhead abundance is less than that specified in the AFRP. See AFRP 2001, Table 1. There is no explanation of the abundance target for Central Valley steelhead returning to the San Joaquin basin (1,700 per year), though this number is clearly less than that required to meet the draft recovery standards for steelhead in the San Joaquin basin. The NMFS 2014 Final Recovery Plan requires two populations in the Southern Sierra diversity group (the San Joaquin drainage basin) to be maintained at low risk of extinction and multiple "Core 2" populations maintained at "moderate risk of extinction" or better. NMFS 2014 Final Recovery Plan at 98. The Recovery Plan defines populations at "low risk" as displaying, among other criteria, a census population abundance of 2,500 fish (or ~833 returning spawners per year). Id. at 97. Two such populations with 833 returning steelhead/year would be a minimum of 1,666 returning steelhead each year. The Recovery Plan defines populations at moderate risk to constitute returns of no less than 250 fish (or ~83 spawning steelhead per year). Id. Three such populations would be a minimum of 249 spawning steelhead. Thus to achieve recovery targets for steelhead in the San Joaquin Basin, it appears that the Delta must provide survival rates that can support the return of no less than 1,916 steelhead each year (two populations at low risk of extinction with at least 833 returning spawners per year, plus three populations at moderate risk of extinction or better, with at least 83 spawners per year) -- this target is more than 12% higher than that used in the Draft Plan's technical appendix.</p> <p>Finally, even with faulty abundance assumptions and unacceptably protracted period assumed for attainment of its abundance targets for the Central Valley salmonids, the Draft Plan's technical appendix reveals that its survival rate targets are likely insufficient to achieve those abundance targets. Specifically, neither spring-run or fall-run Chinook salmon from the San Joaquin basin are projected to reach the abundance targets that the Draft Plan relies on to set Delta survival targets, indicating that these through-Delta survival targets are insufficient to meet salmonid abundance targets for the San Joaquin Valley. In the case of fall-run Chinook salmon, the projected survivals are insufficient to support populations consistent with the CVPIA/AFRP and analogous state law (Cal. Fish and Game Code [Section] 6902) for the San Joaquin River's tributaries. Draft Plan Appendix 3G at 20-21 (Table 4).</p> <p>Furthermore, the Draft Plan assumes maintenance of status quo through Delta survival rates for the first 10 years of a BDCP followed by a very slow incremental improvement in survival rates for various Chinook salmon and steelhead populations. The resulting survival targets would lead to substantial declines in all Central Valley salmonid populations and steelhead, including extirpation of all San Joaquin salmonids in the first 10 years and near eradication of the endangered winter-run Chinook salmon population. Draft Plan Appendix 3G at 20-21 (Table 4). [Footnote 63: Also, it is not clear why the winter run population mysteriously increases from a predicted low of 565 fish in year 10 to 709 fish in year 11 of the BDCP. If this increase is an error as it seems, it will produce erroneous results that overstate the final estimated populations.] This is a clearly unacceptable outcome and significant impact, and there are feasible alternatives and mitigation measures to reduce or eliminate this impact.</p>	
1723	251	<p>The Draft Plan identifies the need to conserve the life-history attribute of salmonid viability. See, e.g., Draft Plan at 3.3-140 (Objective WRCS3.2); id. at 3.3-148 (SRCS3.2); id. at 3.3-156 (FRCS3.2). However, the stated objectives ("Operate water facilities to support a wide range of life history strategies ... without favoring any one life history strategy or trait over</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p>

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		<p>another") is inadequately defined, so it is not possible to tell whether the objective is sufficient, whether the Draft Plan will attain the target (prior to adoption of the BDCP), or under what circumstances adaptive management actions will be triggered to attain the objective (post-implementation). As with similarly ill-defined objectives (such as those described above for longfin smelt and delta smelt), the Draft Plan identifies export operations and associated fish entrainment as a potential stressor on salmonid life history, but the Conservation Strategy offers no guidance as to what constitutes acceptable homogeneity in entrainment risk and how to address it. As described for other species, one approach to quantifying this objective would be to identify entrainment limits on short time steps (e.g., weekly) to assure that no particular temporal component of a migrating cohort of juvenile salmon is disproportionately affected by entrainment; these weekly entrainment limits can be combined with annual and multi-year average entrainment rates in a way that allows for management flexibility and increased protection for covered fish species. Furthermore, the Draft Plan fails to identify targets and actions to limit life-history impacts due to high temperatures or low flows upstream as these impacts tend to be asymmetrical in time (i.e., affecting early or late ends of the diversity spectrum) and are largely under the control of Project operators.</p>	<p>See Master Response 5 regarding BDCP Conservation Measures.</p>
1723	252	<p>The Draft Plan fails to identify any objective for key attributes of viability that are necessary to achieve conservation and recovery of Central Valley salmonid species.</p> <p>The Draft Plan fails to establish objectives for other key attributes of viability that are necessary for recovery, such as spatial diversity. As discussed above, the Draft Plan sets survival objectives for both spring-run and fall-run Chinook salmon and Central Valley steelhead that: (a) likely lead to their extirpation of in the San Joaquin Basin during the first 10 years of the BDCP; (b) provide for no population growth and low abundance for years 10-19; and, (c) never support the abundance target identified as the global goals for the Chinook salmon populations. Draft Plan Appendix 3G at 20-21 (Table 4). If the Draft Plan established an adequate objective for spatial diversity for spring-run and fall-run Chinook salmon and steelhead then it would have focused on identifying stressors (e.g., high through-Delta mortality) and conservation measures (including but not limited to improved flow regimes) that would support conservation and recovery of these covered populations. But because it fails to set adequate objectives, the Draft Plan seems oblivious to the extirpation of existing salmon populations.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p> <p>See Master Response 5 regarding BDCP Conservation Measures.</p>
1723	253	<p>The Draft Plan fails to identify and address the correct stressors on [Chinook salmon and steelhead].</p> <p>The Draft Plan and DEIS/DEIR mischaracterize and understate the impact of reservoir operations on Chinook salmon and steelhead.</p> <p>The Draft Plan and DEIS/DEIR's presentation of stressors on Central Valley Chinook salmon ignores the proverbial elephant in the room -- poor water quality, temperatures, and freshwater flow conditions related to CVP and SWP reservoir operations. Although the Draft Plan correctly acknowledges the historical role of dams in restricting Chinook salmon access to high elevation spawning habitats, see Draft Plan at 3.3-122, it ignores or downplays the impact of current dam operations on available spawning habitat, rearing, and migration habitat. Because the geographic range of Chinook salmon and steelhead spawning in the Central Valley is constrained by the presence of impassable dams (see Yoshiyama et al. 2001; Lindley et al. 2004), conditions below those dams have tremendous influence on the viability of these populations, including their abundance (total carrying capacity),</p>	<p>Appendix 11A, Covered Fish Species Descriptions, includes summaries of threats and stressors for each covered fish species. Appendix 11B, Non-Covered Fish and Aquatic Species Descriptions, includes summaries of threats and stressors to non-covered fish species. These summaries of threats and stressors discuss the stressors noted by the commenter, including instream flows, water temperature, and water quality. Reservoir operations are one mechanism for why these stressors occur and are discussed throughout these sections. Often, instead of the terms "reservoir operations" or "dams", they are referred to as "water operations", "water diversions", or "water exports". Therefore, the commenter is incorrect that this impact mechanism is not discussed adequately in the EIR/EIS.</p>

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		<p>productivity (survival rates), life history diversity (e.g. size and condition of juveniles, timing of upstream and downstream migration), and geographic range (extent of available spawning habitat). High temperatures have multiple deleterious effects on Chinook salmon, the type, severity and frequency of which vary with population spawning time and location. Quinn 2005; Myrick and Cech 2004, 2005; Richter and Kolmes 2005; NMFS 2014 Final Recovery Plan. Central Valley dams and reservoir operations exert great control on water temperature conditions in Chinook salmon spawning and rearing habitat. Nickel et al. 2004; NMFS 2009 Biological Opinion. However, the Draft Plan mentions reservoir operations only tangentially in its discussion of water temperature as a stressor on Chinook salmon. In describing the impact of temperatures, the Draft Plan credits a temperature control device (TCD) on Shasta Dam and "improved reservoir management" as "important factors contributing to the increase in adult winter-run Chinook salmon abundance in recent years." Draft Plan at 3.3-123. Yet the Biological Opinion indicates that upstream water temperatures have exceeded requirements in recent years, despite the TCD. See NMFS 2009 Biological Opinion at 263.</p>	
1723	254	<p>In addition to temperature impacts caused by operations of the Project reservoirs, flows below those dams severely constrain the abundance, productivity, spatial distribution, and life history diversity of numerous Central Valley salmonid populations. For example, following the end of the winter-run Chinook salmon incubation season releases from Shasta/Keswick are often reduced, often resulting in dewatering of fall-run Chinook salmon redds on the Sacramento River, even in recent years. SRTTG 2013; CDFW 2013. Dewatering of early spawning fall-run Chinook salmon on the Sacramento River reduces the life history diversity of this population (by eliminating the fraction that spawn, hatch, and migrate early) as well as its productivity (average survival rate) and overall abundance (carrying capacity). Redd dewatering presents similar problem for steelhead on the American River. NMFS 2009 Biological Opinion at 279 (Table 6-18). Negative impacts resulting from variations in reservoir release have been known to impact steelhead and Chinook salmon on other Sacramento River tributaries as well. See, e.g., Williams 2006 (citing Kurth 2003); DWR 2003.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p> <p>See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Please see Master Response 25 regarding upstream reservoir effects.</p>
1723	255	<p>The Draft Plan does appear to acknowledge the potential for water project operations on temperatures and flow conditions upstream as it sets objectives that require that the BDCP will not reduce the primary constituent elements of winter-run Chinook salmon critical habitat upstream. Draft Plan at 3.3-139 (Objective WRCS3.1). However, this target is misidentified as an objective. Objectives are statements of desired biological outcomes (e.g., a covered species' spawning extent), not drivers of those outcomes (e.g., habitat availability). The point of identifying desired outcomes separately from stressors that will be addressed to achieve those outcomes is to make transparent the Draft Plan's assessment of factors that currently impede attainment of its goals and objectives; such transparency allows reviewers to understand and evaluate the rationale for various elements of the Conservation Strategy. In any case, by setting an "objective" that is already a requirement of the status quo, the Draft Plan ignores potential feasible operational actions that would improve the Projects' ability to provide adequate upstream habitat for covered salmonids. See, e.g., Nickel et al. 2004.</p>	<p>Please see the response to comment 1723-1 regarding the switch in preferred alternative from Alternative 4 to Alternative 4A. Biological Goals and Objectives are not part of Alternative 4A in the same way as HCP alternatives, including Alternative 4.</p> <p>Specific flow targets were not identified in the Draft BDCP because such flow targets have not been established. The State Water Resources Control Board is in the process of establishing flow objectives for several tributaries to the Delta (as part of Phase 1 and 4) and within the Delta (as part of Phase 2). The State Water Resources Control Board prepared a Delta Flow Criteria Report in accordance with the requirements of the Sacramento-San Joaquin Delta Reform Act of 2009. This report was used in the development of the BDCP and Alternatives 7 and 8, but these criteria do not consider the balancing of public trust resource protection with public interest needs for water or other public trust resource needs, such as the need to manage cold-water resources in reservoirs tributary to the Delta.</p>
1723	256	<p>The Draft Plan is inconsistent and incomplete in its treatment of the impact of flow modification as a stressor on different runs of Chinook salmon. Flow modifications resulting from CVP and SWP operations are widely understood to affect survival (productivity), abundance (carrying capacity), spatial distribution, and life history diversity of all Central Valley Chinook salmon populations. Moyle 2002; Williams 2006; Williams 2010; NMFS 2009</p>	<p>Please see the response to comment 1723-1 regarding the switch in preferred alternative from Alternative 4 to Alternative 4A. Biological Goals and Objectives are not part of Alternative 4A in the same way as HCP alternatives, including Alternative 4.</p> <p>Specific flow targets were not identified in the Draft BDCP because such flow targets have not been</p>

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		<p>Biological Opinion; NMFS 2014 Final Recovery Plan. Furthermore, several recent papers have improved our understanding of the relationship between freshwater flow rates, migratory corridor selection within the Delta, and Delta survival rates. See Perry et al. 2010; Michele et al. 2012. Even where the Draft Plan acknowledges the need for adequate freshwater flow rates, it largely fails to identify specific flow targets in different locations (in terms of volume, timing, duration, and frequency) that are needed to conserve and restore the different populations of Chinook salmon from the San Joaquin or Sacramento sides of the Central Valley. For example, in the same table where it sets forth the species-specific objectives for Chinook salmon, the Draft Plan lists "altered migration flows" as a stressor to Chinook salmon. Draft Plan at 3.3-134. However, its target for this stressor is only to "ensure that north Delta intake operations do not increase the incidence of upstream flows in the Sacramento River at the Georgiana Slough junction." Id. This target mistakes ameliorating current stressors on the population with preventing further harm from implementation of one of the Plan's own "conservation measures." In so doing, the Draft Plan ignores the fact that current flow levels are inadequate upstream, into the Delta, through the Delta, and out of the Delta into Suisun Bay. See, e.g., NMFS 2009 Biological Opinion; NMFS 2014 Final Recovery Plan; SWRCB 2010 Flow Report; CDFW 2013 Letter to the State Water Resources Control Board. In addition, one of the landscape level objectives for Chinook salmon that speaks to the need for adequate transport flows for larval and juvenile fish. Draft Plan at 3.3-127 (Objective L3.3). However, this objective is not specific with regard to the magnitude, seasonal timing, or duration of flows (how much water? at what time of year? for how long?), the locations where such flows play an important role (and should be measured), or the percentage of years (frequency) in which they should occur, nor does the Draft Plan identify a time-bound for when these necessary flows will occur under the BDCP. The objective is deficient and unacceptable.</p>	<p>established. The State Water Resources Control Board is in the process of establishing flow objectives for several tributaries to the Delta (as part of Phase 1 and 4) and within the Delta (as part of Phase 2). The State Water Resources Control Board prepared a Delta Flow Criteria Report in accordance with the requirements of the Sacramento-San Joaquin Delta Reform Act of 2009. This report was used in the development of the BDCP and Alternatives 7 and 8, but these criteria do not consider the balancing of public trust resource protection with public interest needs for water or other public trust resource needs, such as the need to manage cold-water resources in reservoirs tributary to the Delta.</p>
1723	257	<p>The Draft Plan and DEIS/DEIR analyze the effect of in-Delta flows on Chinook salmon and steelhead survival almost exclusively in terms of how Old and Middle River (OMR) flows drive salmon entrainment. The Draft Plan and DEIS/DEIR ignore the effect of changes in freshwater flows into, through, and out of the Delta on other stressors the BDCP attempts to address and on improved survival rates of salmonids in this system. Kjelson et al. 1982; Stevens and Miller 1983; Kjelson and Brandes 1989; Brandes and McLain 2001; Newman and Rice 2002; NMFS 2009 Biological Opinion; NMFS 2010 Exhibit 7; NMFS 2014 Final Recovery Plan. For example, in the presentation and evaluation of CM14 (Aeration of the Stockton Deep Water Ship Channel to prevent violations of the dissolved oxygen standard), there is no analysis of the beneficial effect of freshwater flow rates in the lower San Joaquin River on dissolved oxygen rates, despite the fact that this effect is well-studied. Jassby and Van Nieuwenhuysen 2005.</p>	<p>The lead agencies respectfully disagree that the analysis of in-Delta flow effects on salmonid survival is limited to OMR flow effects to entrainment. The effects of flow are examined at several locations within the Delta and are included in other biological models, such as DPM, IOS, and OBAN. Several flow-dependent variables (e.g., toxics, SAV, water temperature, dissolved oxygen) were evaluated. The analysis of San Joaquin River flows on CM14 was not evaluated because reservoir operations in the San Joaquin River system would not change under any alternatives.</p>
1723	258	<p>Neither the Draft Plan nor the DEIS/DEIR alternatives consider provision of increased flow rates from CVP facilities on the San Joaquin River into the Delta as a means of transporting juveniles of covered fish species, attracting adults during spawning migrations, reducing negative OMR rates, alleviating dissolved oxygen problems, or increasing estuary-wide productivity. Increased flow rates also have been shown to decrease predatory efficiency on salmonids. DOI 2011 at 35 -36; USFWS Comments to SWRCB 2012; Cavallo et al. 2012. Decreased flow rates combined with increased Delta export pumping may facilitate high predator abundance in the Delta. See Moyle 2002, Moyle and Bennett 2008. Yet the Draft Plan and DEIS/DEIR do not consider the potential benefits of reducing predation pressure via increased flow rates into, through, and out of the Delta. Also, there is no analysis of the relationship between Delta outflow conditions and salmonid survival, distribution, and</p>	<p>For information on alternatives development, please see Master Response 4.</p> <p>Regarding an analysis of Delta outflow on salmonid survival, distribution, and travel rates, these values are implicitly evaluated in such biological models as IOS, DPM and OBAN.</p>

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		travel rates, though there is strong conceptual support for such an effect.	
1723	259	<p>The Draft Plan overstates the magnitude and/or certainty of stressors on Chinook salmon population and incorrectly treats these stressors as if they have the same impact on all Chinook salmon populations.</p> <p>In contrast to its uneven, weak, and/or missing treatment of critical flow-related stressors on Central Valley salmonid populations, the Draft Plan is overconfident about the magnitude of other stressors on Chinook salmon and steelhead. The Draft Plan frequently accepts any suggestion of a negative outcome for one salmonid population as solid evidence that (a) the factor is a stressor (as opposed to an outcome of other stressors) and (b) that the stressor effects other salmonid populations to the same degree. For example, the Draft Plan confidently states that predation is an important threat to each Chinook salmon population. See, e.g., Draft Plan at 3.3-147 (spring-run); id. at 3.3-154 (fall-run and late fall-run). However, the Draft Plan only cites to a modeling study of predation on winter-run Chinook salmon to support this assertion. Id. at 3.3-122. Juvenile Chinook salmon and steelhead are certainly eaten in the Delta, and always have been; merely demonstrating that predation occurs, or even that predation rates are high relative to other sources of mortality is not evidence that predation is a "problem." Williams 2010 at 53. Furthermore, evidence of predation does not indicate that predation is a "stressor" per se, because any struggling fish is vulnerable to predation (whether it is undernourished, sick, suffering from toxic exposure, struggling with high temperatures, disoriented by poor flow conditions, etc.) -- in other words, even high predation rates may be a only a symptom, rather than a cause, of salmon decline. Grossman et al. 2013. To support its assertion that predation rates may affect productivity of winter-run Chinook salmon, the Draft Plan relies on a modeling exercise, which showed that artificial stocking of predators could impact the recovery prospects of winter-run Chinook salmon. Lindley and Mohr 2003. The Draft Plan fails to address how stressors it identifies (lack of cover, toxins, temperatures) and those it does not (i.e., flow rates) affect predation rates and so fails to establish that controlling predation rates (by controlling predators directly) will actually alleviate impediments to salmonid recovery.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p> <p>See Master Response 5 regarding BDCP Conservation Measures.</p>
1723	260	<p>The modeling paper that the Draft Plan relies on (Lindley and Mohr 2003) to suggest that predation is a problem for winter-run Chinook salmon did not assess potential impacts of predators on other Central Valley salmonid populations and the Draft Plan provides no evidence that predation is an important outcome (much less, a stressor) on these other salmonid populations. Any population-level effect of predation is likely to differ across salmonid populations because these different fish enter the Delta at different times, from different locations, and at different sizes (i.e., they have different exposure and susceptibility to predation). For example, there are far more fall-run Chinook salmon juveniles than winter-run Chinook salmon migrants entering the Delta each year and they co-migrate with spring-run Chinook salmon juveniles, thus the proportional impact of predation on these populations is likely to differ from the impact on winter-run Chinook salmon. Juvenile late fall-run Chinook salmon (which the Draft Plan erroneously treats as equivalent to fall-run Chinook salmon) are larger and thus less susceptible to predation than winter-run juveniles when they enter the Delta. Similarly, the Draft Plan suggests that steelhead migrants are significantly affected by predation in the Delta, see Draft Plan at 3.3-158, but this seems highly unlikely as steelhead spend a relatively short amount of time in the Delta, are usually several times larger (and thus less susceptible to predation) than migrating Chinook salmon fry, and are, in fact, aggressive predators in their own right.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p> <p>See Master Response 5 regarding BDCP Conservation Measures.</p>

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1723	261	<p>The Plan selectively ignores evidence of Project-related stressors to Chinook salmon and/or fails to consider how evidence of such impacts on one Chinook salmon population may indicate negative effects on other runs. For example, the Draft Plan's description of the entrainment stressor suggests that this effect is "not well understood." Draft Plan at 3.3-123. The document makes no mention of numerous detailed studies of this stressor. See, e.g., Kjelson and Brandes 1989; Kimmerer 2008; Kimmerer and Nobriga 2008; NMFS 2009 Biological Opinion. The life history conceptual model for Central Valley Chinook salmon, in its coarse assessment of stressors to all salmonid populations in the Delta, rates "project diversions" and the Delta's "modified hydrograph" as equal to or more important and better understood than "predation by introduced fishes." Williams 2010 at 57 (Table 8). Similarly, the Final Recovery Plan for Central Valley salmonids states:</p> <p>"The primary factors causing mortality of winter-run Chinook salmon in the Delta are considered to be the diversion of juveniles from the mainstem Sacramento River into the central and southern Delta where environmental conditions are poor and reverse flow conditions exist which may move them into the lower San Joaquin River and into the south Delta waterways (NMFS 1997). Survival through central Delta migratory routes is substantially lower than through northern routes. The numbers of juveniles arriving at the export pumps is lower as river flows increase, pumping decreases, and the Delta Cross Channel gates are closed (Cramer et al. 2003)."</p> <p>(NMFS Final Recovery Plan 2014, Appendix B at 2-31.)</p> <p>The Final Recovery Plan indicates that spring-run Chinook salmon probably experience the same negative impact of entrainment into the Central Delta as identified for winter-run. Id., Appendix B at 3-24 to 3-25. The Final Recovery Plan's stressor matrices for winter-run Chinook salmon, steelhead, and spring-run Chinook salmon (Attachments A, B, and C to Appendix B) list both entrainment at the Projects' current diversion facilities and predation in the Delta as stressors of "Very High" magnitude. It is not credible to imply, as the Draft Plan and DEIS/DEIR repeatedly do, that predation is better understood and more important as a population level stressor on Chinook salmon and/or steelhead than the entrainment stressor.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 of the Final EIR/EIS evaluates the effects of predation and entrainment on salmonids.</p>
1723	262	<p>The Draft Plan provides no rationale or analysis supporting the adequacy of its stressor reduction targets.</p> <p>The Draft Plan does not analyze stressor reduction targets for Central Valley salmonids in a rigorous manner and, as a result, the targets are poorly defined and/or inadequate to attain desired biological outcomes (objectives) for salmonids. The point of identifying stressors that limit attainment of the Draft Plan's biological objectives is to force clear analysis of the scale of problems facing the covered species and to ensure that meaningful reductions in stressors occur within the time bounds identified by the objectives. Stressor reduction targets thus identify the degree to which threats must be reduced and the timeframe for producing the desired reduction in stress in order to serve attainment of biological objectives.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>
1723	263	<p>In many cases, the Draft Plan fails to identify even a rough target for reducing stressors. The stressor reduction target for "spatial structure" specifies that it must be attained by year 15, but the description of this target provides no detail regarding how to measure "spatial structure" or how much will be enough. In the end, this target sounds as though it is simply a partial explanation of the rationale for the "lack of rearing habitat" stressor reduction</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>

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		<p>target. In another example of ill-defined stressor reduction targets, "illegal harvest" of steelhead and all runs of Chinook salmon is to be reduced in both the Sacramento and San Joaquin drainages "within the Plan Area" by year 15 (see, e.g., Draft Plan 3.3-169 (steelhead)), but there is no indication of how much reduction in salmon or steelhead poaching the Draft Plan is expected or how much will need to occur in order to attain biological objectives for this species. [Footnote 64: It is also not clear how reduction in poaching of adult fish is relevant to the biological objectives set for salmonids, as there is no productivity or abundance objective for adult salmon.] Above, we describe numerous inadequacies with the Draft Plan or DEIS/DEIR's description and evaluation of the illegal harvest stressor and its related conservation measures.</p>	
1723	264	<p>The Draft Plan sets objectives for improved through-Delta survival rates of juvenile San Joaquin fall-run Chinook salmon and steelhead and survival rates for spring-run Chinook salmon that are, or will be, reestablished in the San Joaquin Basin -- above, we describe why those objectives are inadequate. Stressor reduction targets for San Joaquin population are related to entrainment, predation, and rearing habitat for fall-run Chinook salmon, Draft Plan at 3.3-159, spring-run Chinook salmon, id. at 3.3-151, and steelhead, id. at 3.3-168. The stressor reduction targets for predation are specific to predation rates in the export facility infrastructure and are thus redundant of the stressor reduction target related to "survival rates at south Delta export facilities" -- it too calls for reduced predation within the canals and bays of the export infrastructure). The latter stressor reduction target is not SMART [specific, measurable, attainable, relevant to the goal they describe, and time-bound] as there are no specifics regarding how much or when entrainment related mortality will be reduced; thus, there is no way of telling how reduction of this stressor will contribute to improved Delta survival rates specified in the objectives for salmonids.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>
1723	265	<p>The "lack of rearing habitat" stressor is specific and time-bound, but the Draft Plan's description of these attributes demonstrates how little BDCP plans to reduce this stressor, particularly as compared to the needed survival improvements in the south Delta. The Draft Plan calls for restoring migrating juvenile salmonids access to at least "1000 acres of inundated floodplain habitat, primarily within the south Delta." Draft Plan at 3.3-169. This is one seventh of the floodplain acreage the Draft Plan intends to provide in the north Delta, on the Yolo Bypass, for salmonids of the Sacramento Basin, yet there is no explanation as to why migratory fishes of the San Joaquin basin require so much less floodplain habitat than Sacramento River fish. The Draft Plan calls for this new San Joaquin floodplain habitat to be inundated for a minimum of 1 week, while similar habitat on the Sacramento River is to be inundated for at least 30 days. Again, there is no explanation of why the same fish (i.e., fall-run Chinook salmon) using the same kind of habitat (inundated floodplains) would require different amounts (extent or duration) of that habitat, though the Draft Plan acknowledges that inundation periods of less than 30 days are expected to result in a lesser benefit to juvenile growth compared to inundation that extends longer than 30 days. Draft Plan at 3.4-41. Furthermore, the stressor reduction target specifies that, "On average, 50 acres of floodplain will be inundated a minimum of every other year, 500 acres will be inundated a minimum of every 5 years, and all 1000 acres will be inundated a minimum of once every 10 years." Id. In other words, a negligible amount of floodplain habitat will be available in only about half of years and a tiny amount will be available at a frequency of approximately once every five years. Central Valley Chinook salmon have a generation length of approximately 3 years (Moyle 2002; Williams 2006), so it is possible that two generations of migrants out of three would not experience even 500 acres of inundated habitat. Similarly, many Chinook salmon generations could migrate down the San Joaquin River without experiencing the relatively small maximum amount of floodplain habitat</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>

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		expected to occur in 1 year out of 10.	
1723	266	Though inadequate, the Draft Plan's objectives for survival through-Delta survival rates of San Joaquin salmonids are many times the current, miserably poor, survival rates. But the stressor-reduction targets the Draft Plan identifies are simply inadequate to affect such improvements, much less to attain objectives that would actually be adequate to restore San Joaquin salmonids. The floodplain habitat stressor reduction target is expected to occur by year 15 of the Plan, therefore, even if the stressor reduction target had any meaningful effect on San Joaquin survival, it would not contribute in any way to preventing extinction of all San Joaquin Valley salmonids that the Appendix 3G of the Draft Plan expects will occur within the first 10 years of the BDCP. Had the BDCP planning process followed a logical and science-based planning process, the disconnect between the timing of biological outcomes and the stressor reduction targets and conservation measures necessary to achieve desired outcomes would have been transparent; this would have necessitated design and evaluation of actions that were appropriately scaled and timed to attain the adequate conservation and restoration objectives.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.
1723	267	No target is identified for the "Migration Flows" stressor San Joaquin basin salmonids. This is problematic and unjustifiable given (a) the extremely impaired flows of the San Joaquin as it enters the Delta (see, e.g., NMFS 2009 Biological Opinion; NMFS 2014 Final Draft Recovery Plan; State Water Resources Control Board 2010 Flow Report; VAMP Panel Report 2010; NMFS March 28, 2013 Comment Letter on SWRCB 2012, Phase 1 WQCP SED), (b) the Draft Plan sets a "Migration Flow" stressor reduction target (though inadequate and ill-defined) for the Sacramento River, which has much higher spring flows (both absolute and proportional to the Basin's full-natural flow) than the San Joaquin River now and under the Draft Plan, and (c) the State Water Resources Control Board is currently contemplating water quality standards that would improve flow conditions in the lower San Joaquin. Improved flows in the lower San Joaquin are necessary to conserve and restore salmonid populations and other public trust values in that drainage and in the southern Delta. SWRCB 2010 at 119; USDOl Comments to the SWRCB 2013 at 31; NMFS 2013 Letter to the SWRCB at 1 and Enclosure 1 at 1; CDFW testimony to the SWRCB 2010b; CDFW Letter to the SWRCB 2013 at 5-6. Improved flows are also a foreseeable outcome of the State Board's update of the applicable Water Quality Control Plan, as we discuss in section I of these comments. [Footnote 65: We note that CVP facilities in the San Joaquin Basin affect the San Joaquin River inflow to the South Delta.]	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.
1723	268	For each Chinook salmon population and for steelhead, the Draft Plan sets a goal of reducing passage delays for adults migrating through the Delta at human-made impediments. See, e.g., Draft Plan at 3.3-171 (Goal STHD2). In each case, the objective for this goal is to limit adult passage delays to less than 36 hours by year 15 of the BDCP. There is no indication of why it would not possible and desirable to remove human-made impediments to adult passage in less than 15 years or why it is not possible to restore relatively unfettered passage in less time. A key part of restoring passage for salmonids (and sturgeon and lamprey species) migrating through the Sacramento River is to modify the barriers formed by the Fremont, Lisbon, and Sacramento Weirs. Most or all of these actions are required under the 2009 NMFS Biological Opinion. Specifically, RPA Action I.6 and I.7 identify most of the same passage improvements described in the Draft Plan's CM2. NMFS 2009 Biological Opinion at 608-611. The Draft Plan indicates that the passage barrier modifications will all occur within Phase 1	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.

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		(years 1-5 of the BDCP) or Phase 2 (years 6-10).	
1723	269	<p>The Biological Opinion specifies that one half of the habitat restoration target of 17,000 to 20,000 acres of floodplain habitat must be restored by 2016. NMFS 2009 Biological Opinion at 609. There is no reason why the Draft Plan's stressor reduction objective for adult passage of salmonids, and the component projects related to improving adult fish passage through the Yolo Bypass, should not be fully implemented in less than 15 years following adoption of BDCP. If, in fact, it is not possible to eliminate human-made barriers to fish passage in less than 15 years using the approaches described in CM2, then the Draft Plan ought to identify measures that can produce the desired biological outcome in less time. Again, we emphasize that the Draft Plan's own technical appendix (Appendix 3G) demonstrates that juvenile survival rates in the Delta will contribute to population declines (and perhaps extirpation for certain runs) for all central Valley salmonids for at least 10 years into the BDCP -- the imperative to increase survival rates for salmonids (of any life stage) migrating through the Delta could not be more urgent.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>
1723	270	<p>Conservation measures do not adequately address known stressors for [Chinook salmon and steelhead] and/or their impacts are inaccurately portrayed.</p> <p>Conservation measures identified in the Draft Plan are deficient in comparison with similar measures that are already required.</p> <p>In some cases, actions described by the Draft Plan are similar to those identified by the National Marine Fisheries Service Biological Opinion RPA (Reasonable and Prudent Alternative) as necessary to prevent jeopardy to listed salmon species; however, the Draft Plan proposes a longer time period for implementation and/or a reduction in the magnitude of these actions as compared to what is specified in the RPA. For example, "CM2 Yolo Bypass Fisheries Enhancement" includes many of the same actions that are required by the 2009 NMFS Biological Opinion. The Draft Plan acknowledges the relationship between the RPA specified actions and those described in CM 2 (at 3.4-40), but the "fisheries enhancements" (largely floodplain restoration and removal of passage barriers) expected under the Draft Plan's CM2 are less than those specified by the RPA and BDCP implementation lags behind that required in the RPA.</p> <p>Action I.6.1 of the RPA requires that an "initial performance objective" of 17,000-20,000 acres of inundated floodplain habitat (excluding acres under tidal influence) be restored in the Yolo Bypass, and it specifies that, "[i]n the event that less than one half of the total acreage identified in the plan's performance goal is implemented by 2016, then Reclamation and DWR shall re-initiate consultation." NMFS 2009 Biological Opinion at 608-609. In contrast, the Draft Plan targets restoration of only 7,000 acres of inundated floodplain habitat on Yolo Bypass, less than half of that required by the RPA. See Draft Plan at 3.3-159 (fall-run Chinook salmon); id. At 3.3-179 (Sacramento splittail). And it will not restore even this amount of habitat by 2016 as many of the "component projects" of CM2 are not scheduled to begin until the BDCP has been in effect for more than 5 years (i.e., Phases 2-4). The Draft Plan never identifies restoration of 17,000-20,000 acres of floodplain habitat on Yolo Bypass, as required by the RPA, as a stressor reduction target; thus, the BDCP's conservation measure for Yolo bypass fishery enhancements is less than what was required under the 2009 NMFS Biological Opinion as part of a suite of actions necessary to prevent jeopardy to the listed winter-run Chinook salmon, spring-run Chinook salmon, or steelhead. [Footnote 66: In addition, other reviewers have emphasized the need for Yolo Bypass restoration to be completed prior to initial operations of the north Delta intakes, because of</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p> <p>Note that Alternative 4A does not propose any actions in the Yolo Bypass.</p>

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		the additional impacts to migrating salmon from operation of new intakes. Mount & Saracino et al.2013. This further demonstrates the need to exceed the requirements of the 2009 Biological Opinion.]	
1723	271	<p>Some conservation measures identified for Central Valley salmonids are speculative and the likelihood and magnitude of benefits is unspecified, undocumented, and likely to be very low.</p> <p>As with other species, the Draft Plan's expectations of benefits to many of the covered salmonids arising from restoration of tidal wetlands are speculative and overstated. The Draft Plan asserts that juvenile salmonids migrating through the freshwater and brackish water estuary will benefit from the addition of tidal rearing habitat and increased availability of food that is assumed will result from these restoration efforts. Draft Plan at 3.4-119. The assumption that Chinook salmon will rear in newly created tidal wetlands habitats is based on work from ecosystems in the Pacific Northwest where salmon rear in the estuarine environment. See Simenstad et al. 1982; Healy 1982.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Regarding impact analysis for salmon and steelhead see impacts AQUA-37 through AQUA-104, Chapter 11, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements and BDCP Conservation Measures.</p>
1723	272	<p>However, recent research from the San Francisco Bay-Delta ecosystem indicates that the assumed benefits to Central Valley salmonids of tidal marsh restorations are uncertain and may not materialize. The life history conceptual model for Central Valley salmonids states, "Spring Chinook, or at least the Butte Creek population, pass quickly through the Delta, so habitat restoration there seems unlikely to do much for them. The same is probably true for late-fall Chinook, and for steelhead." Williams 2010 at 41.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter offers their opinion on the benefits of tidal restoration for salmonids. No specific comments are made on the EIR/EIS.</p>
1723	273	<p>Recent, extensive research on the growth, survival, and migration rates of fall-run Chinook salmon through the San Francisco Estuary and in the nearshore ocean demonstrates that Central Valley Chinook salmon transit the brackish portion of the estuary quickly and gain little or no weight in the process; salmon smolts from the Central Valley grow more than ten times faster in the nearshore ocean than they do in the saline portion of the San Francisco Estuary. MacFarlane and Norton 2002; MacFarlane 2010. Although this may reflect the lack of suitable and highly productive estuarine rearing habitat in the current San Francisco Estuary (which has lost the vast majority of its tidal wetlands), it is also possible that low estuarine growth rates, coupled with high growth rates in the nearshore ocean has always been the case for Central Valley salmonids, as it is in many other river-estuary systems. See MacFarlane 2010 (providing examples). If this is the case, then restoration of complex "rearing" habitats in the Delta may serve to trap or delay small Chinook salmon migrants (exposing them to predators and potentially high Delta temperatures) more than they serve to increase growth and survival of these fish.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter offers their opinion on the benefits of tidal restoration for salmonids. No specific comments are made on the EIR/EIS.</p>
1723	274	<p>Actions to reduce illegal harvest of salmon are not sufficiently described to determine their potential to benefit adults of any of the migrating Central Valley salmonid populations. It seems very unlikely that the improved enforcement of fishing regulations would be sufficient to contribute meaningfully to restoration of all salmonid populations in both the Sacramento and San Joaquin River watersheds. Our skepticism regarding the efficacy of the Illegal Harvest Reduction conservation measure (CM17) for salmonids stems from the fact illegal harvest is not likely to be a major conservation threat to all salmonid populations of the Central Valley, not likely to be equally distributed across the Sacramento and San Joaquin basins, and not likely to be best addressed in the Delta (as specified in the stressor reduction measure). Thus, the increased enforcement identified in this conservation measures seems completely inadequate to the task of limiting illegal harvest of the number of species (two sturgeon species, five Sacramento River salmonid populations and three San</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As stated in Section 5.5.3.1.5 of the 2013 Public Draft, the analysis related to CM17 reflected the input of DFW biologists and law enforcement officers (Roberts and Laughlin 2013). Alternative 4A, the preferred alternative, does not include Conservation Measure 17</p>

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		Joaquin River salmonid populations) and in the geographic area covered by this action.	
1723	275	<p>Projected outcomes for Chinook salmon do not attain the conservation standard for these species. In addition, the presentation of these results is inaccurate, biased, and unacceptably confusing.</p> <p>The Draft Plan and DEIR/DEIS both demonstrate that BDCP, alone as well as in combination with climate change and other cumulative impacts, is likely to result in negative outcomes for the abundance, productivity (survival), life history diversity, and spatial distribution of several Chinook salmon and steelhead populations. The best available science demonstrates that: the three ESA-listed salmonids will experience reduced survival through the Delta, reduced abundance, and increased risk of extinction; the commercially valuable fall-run will decline substantially; and, none of the populations are likely to attain even the inadequate objectives described in the Draft Plan.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The effects analysis of Alternative 4A in Chapter 11 demonstrates that there would be no adverse effects or significant impacts on salmonids.</p>
1723	276	<p>The Draft Plan and DEIS/DEIR predict severe impairment of winter-run Chinook salmon population viability; significant impacts are overlooked or obfuscated by inaccurate and irrelevant comparisons</p> <p>The modeling analysis demonstrates that the Draft Plan will result in substantial decreases in abundance, productivity, and life history diversity.</p> <p>The DEIS/DEIR inaccurately claims no beneficial or negative flow-related effect for winter-run Chinook salmon from Alternative 4. DEIS/DEIR at 11-55. However, this reporting ignores several large negative effects reported in the Draft Plan's Effects Analysis and those that are likely to arise from large changes in flow and temperature reported in the DEIS/DEIR.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis in the EIR/EIS reflects the most recent approaches used in the analyses being conducted for the consultations with the NMFS, USFWS, and CDFW, which have been developed with input from the agencies.</p>
1723	277	<p>The Draft Plan's Effects Analysis employs two life cycle models to evaluate the BDCP's likely effects on winter-run Chinook salmon. Draft Plan Appendix 5G. These models project that conditions in the future will be worse for winter-run Chinook salmon assuming current operations required under the Biological Opinion and other environmental standards and climate change as modeled in the BDCP (EBC2_ELT and EBC2_LLT -- existing biological conditions 2-early long term and -late long term).</p> <p>Comparing outcomes of the Draft Plan to the status quo under assumed conditions in the future, the results indicate an impermissible negative impact to this endangered salmon population. In reviewing results of the OBAN modeling framework, the Draft Plan's technical appendix states: "The median of median escapement for [evaluated starting operations] ESO_ELT was 28% lower than the median for EBC2_ELT, and the median of median escapement for ESO_LLT was 13% lower than the median for EBC2_LLT (Table 5.G-9)." Draft Plan Appendix G at 5.G-51. [Footnote 67]. These results indicate that changes in CVP/SWP operations will be needed to sustain salmonids and achieve long term population abundance targets, particularly in light of climate change and other stressors.</p> <p>[Footnote 67: Because organisms experience conditions in particular years, not in the "mean" year, comparisons of the frequency distribution of results are more valuable than simply comparing averages. However, if a quick comparison is to be informative, median results (an indicator of the frequency distribution) are far more relevant than comparison of "mean" results; the latter are almost useless when, as the Draft Plan is at pains to emphasize, model results are not believed to reflect actual values, but are for comparative purposes only. The mathematical mean and variance of a set of values is irrelevant and</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 31.</p> <p>The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.</p>

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		likely to be misleading if the individual values are not believed to be accurate. When the purpose of analysis is to compare relative outcomes of scenarios, a variety of non-parametric statistical analyses are available (e.g., Chi-Square tests for differences in distribution, Wilcoxon Ranked Signs Test, etc.). The technical appendix states: "The BDCP effects analysis uses life cycle models to provide relative comparisons among the effects of alternatives (e.g., direction and relative magnitude of anticipated population response). These results should therefore not be interpreted as predictions of changes in population abundance." Draft Plan Appendix 5G at 5.G-3. The Draft Plan inappropriately presents mean values and parametric error bounds of modeled scenarios despite this warning.]	
1723	278	The other model used to assess changes in winter-run Chinook salmon survival into and through the Delta (IOS) indicates that fry survival (Draft Plan at Table 5.G-20) and smolt survival (Draft Plan Table 5.G-21 to 5.G-23) will decline substantially under the Draft Plan BDCP in both the early and late-long term. This model projects a median decline in winter-run Chinook salmon escapement under the high outflow scenario of 27% relative to the EBC2_ELT (existing biological conditions 2-early long term) (the comparison that incorporates climate change assumptions in the early long term for both scenarios); the low outflow scenario shows even more dramatic declines in winter-run Chinook salmon escapement, 66% lower escapement under the BDCP in the median case. Draft Plan at Table 5.G-25. Thus, the model provides no support (and clearly contradicts) the NEPA/CEQA finding that BDCP will not result in significant impacts to salmon migration (AQUA-42). Comparing future conditions under the BDCP Alternative 4/H3 (ESO) to modeled current conditions (without climate change) reveals that IOS predicts a decline in winter-run abundance of 53% in the early long term and 80% in the late long term. Draft Plan at Table 5.G-25 and 5.G-26.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.
1723	279	As elsewhere, the DEIS/DEIR focus on changes in mean values understates the magnitude of the impacts that will be expected in years that are worse than average--impacts in below average years may damage the population irreparably (including, but not limited to, extinction). Understanding the conservation consequences to imperiled species requires assessment of the entire range of potential differences--the DEIS/DEIR should report both the median of differences (not the difference between the medians) and the range of differences between paired predictions arising from different scenarios. These reported declines under equivalent assumptions of climate change represent either the proportional difference between the median cases of both scenarios or the median of differences across years in the comparison (it is not clear which, though the latter would be more informative) but, in either case, it is clear that these declines do not represent the largest declines anticipated from implementation of the BDCP alternative. The technical appendix also presents these results in terms of mean declines and as the projected absolute difference in number of fish returning to spawn, despite the repeated warning in the technical appendix that these model results are for comparison purposes only.	Please see response to comment 1723-1 regarding the change in preferred alternative from Alternative 4 to Alternative 4A. The results for analyses in Chapter 11 are provided by water year type and with water year types combined into a single average across all years when possible. Rather than discuss results for each water year type in the text, average values are often provided. However, the determinations consider individual water year types whenever possible. Although superior for a statistical analysis, which was not done for the large majority of analyses in the EIR/EIS due to various constraints, pairing outputs of individual years is an incorrect use of the CALSIM II model outputs. Please see Appendix 5A for more information on limitations of the physical modeling tools used in this analysis. CALSIM II is a long-term operations evaluation tool and individual years should not be compared. It is for this reason that results are often presented as exceedance plots that do not assign year values to individual outputs. Without a specific reference, we are unable to respond to the last part of this comment about reporting results in the technical appendix. However, as the commenter notes, evaluating differences in an effect relative to a baseline are the correct use of model outputs. Absolute differences are sometimes superior to presenting relative differences due to low values inflating the relative differences with no biological significance, but such analyses are still relative to the baseline.
1723	280	Although both OBAN and IOS use different assumptions and analytical approaches to estimate Chinook salmon population response to different scenarios, both models project declines in winter-run Chinook salmon escapement under the BDCP, as described in the Draft Plan, when compared with current operations and infrastructure (assuming the same	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 31. The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.

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		<p>effect of climate change for both proposed BDCP and No Action scenarios). In both cases, the negative results were attributed to low reservoir storage and low river flow conditions arising from the BDCP. For example, the technical appendix describes the results for OBAN as follows:</p> <p>"The lower escapement of winter-run Chinook under ESO (evaluated starting operations) compared with EBC2 (existing biological conditions 2), even though through-Delta survival was higher under ESO, is the result of differences in modeled conditions in the Sacramento River above the Delta. In the Sacramento River spawning reaches, modeled water temperatures at Bend Bridge were higher (Figure 5.G-3) and minimum flow rate were lower (Figure 5.G-4) under the ESO compared to EBC2 scenarios, particularly during the ELT. These differences in Sacramento River conditions cause lower survival in ESO scenarios relative to EBC2 scenarios in the alevin and fry stages and are ultimately reflected in lower escapement under ESO."</p> <p>(Draft Plan Appendix G at 5.G-54.)</p> <p>The Draft Plan Technical Appendix explains its IOS modeling results as follows: "The lower BDCP scenario survival rates were the result of increased flow-related mortality in specific model reaches in the Delta," Draft Plan Appendix 5G at 5.G-68, and "Modeled differences in egg and through Delta survival accounted for the largest differences in escapement between scenarios after the effects of climate change are considered," Id. at 5.G-72. Using two through-Delta survival models, different than the ones applied by the Draft Plan, NMFS (National Marine Fisheries Service) projected decreased through-Delta survival for winter-run Chinook salmon juveniles under Alternative 4/H3 as compared to EBC2 in the late-long term. NMFS 2013 Evaluation of Flow Effects at 4. Projected survivals for winter-run and steelhead were also lower under HOS (high outflow scenario) and LOS (low outflow scenario) than under EBC2 in all years. Id. NMFS' estimates of through-Delta survival for spring-run Chinook salmon under H4 were lower than that projected for EBC2 in a substantial fraction of years in the late-long term. Id. Survival under HOS was generally substantially higher than under LOS for spring-run, steelhead, and fall-run. Id.</p>	
1723	281	<p>The finding that flow rates and temperature conditions would be negatively impacted during the winter-run incubation, rearing, and migration period reveals that the Draft Plan will not achieve many of its major goals for winter-run Chinook salmon and is not likely to achieve the Draft Plan's biological objectives, will cause significant environmental impacts (contrary to conclusion AQUA-42 that Alternative 4 and several other alternatives would cause less than significant impacts for migrating winter-run salmon), and may result in operations that jeopardize winter-run Chinook salmon. Goal WRCS3 calls for "No degradation of aquatic habitat conditions upstream of the water facilities." Draft Plan at 3.3-145. The related objective (WRCS3.1) states that this species' critical habitat will not be impacted. Id. Clearly, if mortality increases because of increased temperature and reduced flow rates upstream, then "aquatic habitat conditions upstream of the water facilities" have been degraded. These projected outcomes represent not simply a failure to meet an important restoration goal of the Draft Plan, but a likely degradation of winter-run critical habitat. See 50 CFR [Section] 226.204. These findings also contradict the Draft Plan's repeated claim that BDCP will not affect how cold water pool and flows in the upper Sacramento River are managed. See, e.g., Draft Plan Appendix 5G at 5.G-60; see also discussion in section II of these comments regarding modeling flaws. Furthermore, population declines are inconsistent with requirements of the ESA and NCCPA as they</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.</p>

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		increase the risk of extinction and move the population away from recovery.	
1723	282	<p>The Draft Plan improperly ignores the results of its own modeling regarding severe negative impacts to winter-run Chinook salmon.</p> <p>The Draft Plan’s technical appendix uses spurious arguments and metrics in an attempt to dismiss the OBAN and IOS model results that reveal the Draft Plan will likely lead to significant impacts to viability and degraded conditions for winter-run Chinook salmon upstream and in the Delta. For example, the technical appendix points to the variance in OBAN and IOS model predictions to suggest that there may actually be no difference in model outputs between the BDCP and baseline conditions in the future. Figures such as 5.G-21, 5.G-23, 5.G-24, and 5.G-26 imply a spurious comparison of within-scenario means relative to their total variance (error bars) when the relevant comparison between scenarios would involve analysis of the differences in outcomes within years (a paired analysis) -- as stated above, any analysis that relies on mean values and calculated variances is inappropriate.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.</p>
1723	283	<p>Although we appreciate the recognition that variance in model predictions must be accounted for when interpreting model outputs, we note that:</p> <p>* The Draft Plan and DEIS/DEIR do not present error bounds whenever doing so might discount findings that these documents suggest reflect positively on the BDCP. For example, the Draft Technical Appendix’s analysis of OBAN model predictions of through-Delta survival for winter-run Chinook salmon claims improvement under BDCP operations (see, e.g., Draft Plan Appendix 5G at 5G-48) and the DEIS/DEIR compares these "positive" results to negative outcomes of the IOS model to suggest that the models conflict and therefore there is uncertainty about the effect of Alternative 4 on winter-run Chinook salmon juvenile survival in the Delta (see, e.g., DEIR/DEIS at 1333). However, neither document reveals that the purported improvement in through-Delta survival rates detected by OBAN are nearly undetectable. Draft Plan at Figure 5.G-13 and 5.G-14. It would be extremely surprising if the maximum survival differences in through Delta survival projected under different scenarios (~0.15%), not to mention the median differences (0.09%; see Draft Plan at Table 5.G-7), reflected an actual improvement (i.e., were outside the error bounds for the OBAN model’s survival estimation routine). That error estimate is not presented. Thus, any "contradiction" between OBAN and IOS in their estimate of through-Delta survival has likely been overstated: IOS projects substantial declines in Chinook salmon through-Delta survival rates (productivity) and OBAN finds no improvement; both models project declines in survival upstream of the Delta. Even if the differences OBAN detects in through-Delta survival rates for different scenarios were real (in terms of the model’s inherent error), it is clear that the extremely tiny alleged increases in through-Delta survival will not lead to the sizeable (though still inadequate) improvements in through-Delta survival specified in the BDCP objective (WRCS1.1) for winter-run Chinook salmon. Thus, there is no scientific evidence that the draft plan is likely to achieve the Draft Plan’s biological objectives for salmon survival through the delta.</p> <p>* The implied statistical comparison of upstream survival rates between scenarios is statistically inappropriate because it confounds variance among years surrounding the mean modeled outputs with variance in the difference between modeled outputs within years. The appropriate statistical approach is a comparison of pairs of "observations" (model outputs for different scenarios) that occur in the same year; in other words, a statistical comparison (if one were valid) would analyze the mean and variance of the differences, not</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The presentation and interpretation of IOS and OBAN results is very different from the DEIR/DEIS document. Please see Chapter 5 and Appendix 5.D of the California WaterFix BA for IOS and OBAN model descriptions and results. The IOS and OBAN descriptions and interpretation of results in the FIER/FEIS have changed greatly since the DEIR/DEIS was released in 2013. Please see Chapter 11 of the EIR/EIS for more detail.</p>

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		<p>the difference between means relative to total variance in the modeled time series. Simply looking at the comparison of OBAN escapement estimates for EBC2_ELT (existing biological conditions 2-early long term) and ESO_ELT (evaluated starting operations-early long term) (upper panel of Figure 5.G-15) suggests that the difference between modeled escapement frequently favors EBC2-ELT; OBAN's detection of abundance declines is likely to be statistically significant, whereas the statistical comparison implied by Figure 5.G-17 (which shows overlapping among-year error bounds for each scenario) are completely irrelevant and entirely misleading.</p> <p>* The use of quantitative comparison of means and variance estimates is inappropriate given the technical appendix's repeated warning that its modeling outputs are for relative comparisons of between scenarios and that the results should not be compared to absolute survival or escapement targets. Comparing differences in the frequency distribution of outcomes are far more appropriate here as the frequency of high and (particularly) low abundances are of greater interest than are the mean population estimates over time -- there are tests for differences between frequency distributions (e.g. Chi-square) and non-parametric analyses appropriate for relative comparisons (e.g. Wilcoxon Ranked Signs test) that the technical appendix and DEIS/DEIR should have employed.</p>	
1723	284	<p>The Draft Plan improperly interprets results of a "sensitivity analysis" to undermine the projections from its models. The comparison of "high outflow" and "low outflow" scenarios with EBC2 (existing biological conditions 2) conditions modeled by OBAN clearly demonstrates that both of these scenarios will produce substantial declines in the median outcome across the early and late long term. Draft Plan at Table 5.G-13. All alternatives where OBAN modeling is presented (including Table 5.G-13) indicate a decline in winter-run Chinook salmon escapement compared to the NAA (No Action Alternative).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The EIR/EIS addresses effects on winter-run Chinook salmon in Chapter 11.</p>
1723	285	<p>As with the OBAN model, the technical appendix presents results of a "sensitivity analysis" for the IOS model and uses those outputs to cast doubt upon the clear implications of the IOS model results described above; once again, the argument is not credible. When different assumptions are made regarding either winter-run migration paths (e.g., due to implementation of non-physical barriers, CM16) or mortality at the new North Delta diversion facility, IOS model outputs change. From this, the technical appendix derives the elementary conclusion that if different model assumptions and inputs are made, then the model will produce different outputs. But in no case do BDCP operational variants produce higher through-Delta survival than environmental baseline conditions. Draft Plan at Figure 5.G-27 and Figure 5.G-28. There is no rationale for the technical appendix's conclusion that, because the IOS model is "sensitive" to assumptions about conditions in the Delta (which it terms a "limitation"), "IOS results alone do not provide a sufficient basis for drawing conclusions about the overall effect of the BDCP on winter-run Chinook salmon." Draft Plan Appendix 5G at 5.G-78. This statement is problematic because: (1) all models ought to be sensitive to model inputs and assumptions (that is the advantage and disadvantage of quantitative modeling exercises); (2) if the Draft Plan concludes that a model is not appropriate for evaluating future scenarios, it should not dedicate a large fraction of a lengthy technical appendix to describing and presenting model outputs; (3) the conclusion derived from review of the technical appendix's modeling efforts is not based on "IOS alone"; the IOS modeling results are consistent with OBAN modeling results in projecting very serious negative outcomes for winter-run Chinook salmon; and (4) the technical appendix presents no scenario in which BDCP operations result in higher median modeled escapements than those projected under environmental baseline conditions in the Early Late Term, and most scenarios result in lower median modeled escapements in the LLT (see</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The IOS and OBAN descriptions and interpretation of results in the FIER/FEIS have changed greatly since the DEIR/DEIS was released in 2013. Please see Chapter 11 of the EIR/EIS for more detail.</p>

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		<p>Draft Plan at Figure 5.G-27 and Figure 5.G-28) and certainly none that demonstrate attainment of the Draft Plan's own inadequate biological objectives for this species. The Draft Plan's dismissal of the OBAN and IOS modeling results (simply because the model is sensitive to assumptions about modeling inputs) is one of many examples of the Draft Plan and DEIS/DEIR's biased presentations of the BDCP's likely effects.</p> <p>The results of these modeling runs indicate that changes to flows and temperatures described in the DEIS/DEIR and the Draft Plan will not lead to improved survival of winter-run Chinook salmon in fresh water. As such, the proposed project as described in the Draft Plan and most of the DEIS/DEIR alternatives are not likely: (a) to attain the survival targets set in the BDCP objective for this species (as the ESO estimates clearly underperform the current baseline ("EBC2"); or (b) to increase abundance of winter-run Chinook salmon. Current survival rates in freshwater (through-Delta and upstream) are inadequate to attain any of these targets (and even the BDCP survival objective WRCS 1.1 is not adequate to attain the CVPIA/AFRP targets within the lifespan of the project, see above); thus, survival rates lower than the current level cannot be adequate or acceptable.</p> <p>Whichever approach is used to estimate the significance of differences in winter-run Chinook salmon abundance among scenarios, the Draft Plan and DEIS/DEIR should have acknowledged that, under ESO assumptions, OBAN predicts near-extinction of winter-run Chinook salmon in all but a few years of the 23 year model run depicted in Figure 5.G-15. IOS estimates similarly disastrous results. Reviews of previous versions of the Draft Plan have remarked that, having chosen OBAN and IOS to model projected outcomes of different BDCP operational scenarios, the results of these models should not be "... discounted because they do not show what was "expected." Since these methods were deemed acceptable, the results need to be fully acknowledged." NMFS 2013 Progress Assessment at 12. It is clear that the NCCPA/ESA conclusions in the draft plan, and the CEQA/NEPA findings of less than significant impacts, are not supported by substantial evidence.</p>	
1723	286	<p>The DEIS/DEIR fails to report potentially significant negative impacts to winter-run Chinook salmon arising from the project by improperly attributing negative impacts and by ignoring its own analysis.</p> <p>The DEIS/DEIR is inconsistent and internally contradictory in its presentation of temperature and flow impacts to winter-run Chinook and other salmonids in the Sacramento River. Important impacts are overlooked, dismissed without sufficient analysis or obscured with inappropriate comparisons. Its findings of "Not Adverse" and "Less than Significant" flow-related impacts to winter-run Chinook salmon are unsubstantiated and not scientifically credible. DEIS/DEIR at 11-55 (Table 11-4-SUM1).</p>	<p>The analyses contained in the DEIS/DEIR provide the rationale for the conclusions regarding winter-run Chinook salmon and other salmonids. This comment does not provide specific details from which to respond to the commenter's suggestion that the analysis is inadequate. Please note that an RDEIR/SDEIS was developed and circulated in 2015, which included 3 new Alternatives including the new preferred alternative, 4A. The evaluation of the effects of Alternative 4A are included in the RDEIR/SDEIS.</p>
1723	287	<p>Temperature Impacts:</p> <p>High temperatures below Shasta and Keswick dams during the winter-run incubation period are a well-known impact on winter-run Chinook salmon. The NMFS [National Marine Fisheries Service] 2009 Biological Opinion notes that "the annual change in TCP [Traditional Cultural Property] has degraded the conservation value of spawning habitat" for winter-run. NMFS 2009 Biological Opinion at 91. Thus, high temperatures in the Sacramento River downstream of Shasta-Keswick have been problematic even when direct impacts of high temperatures (egg or juvenile mortality) have been minimized through real-time management of cold water pool resources. The prior history of Keswick/Shasta operations strongly suggests that the model results overestimate benefits and underestimate the likely</p>	<p>Real-time operations are primarily designed to ensure that water temperature criteria downstream of Keswick Dam are not exceeded.</p>

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		environmental impacts of upstream temperature impacts from CVP operations, particularly in light of real time operations to allow greater water deliveries.	
1723	288	<p>As a consequence of operations under Alternative 4 of BDCP, the Bureau of Reclamation winter-run egg mortality model projects much higher mortality rates under Evaluated Starting Operations (H3, "ESO") than under the No Action Alternative (NEPA comparison) during "below normal" and "dry" year types (relative differences in mortality are 76% and 11% higher, respectively, under ESO). DEIS/DEIR at Table 11-4-17. The DEIS/DEIR seeks to minimize those differences by arguing that they "only" happen in two year-types and that the absolute difference in egg mortality is "only" about 1% of the egg population. Id. Both arguments are spurious. Egg mortality is generally a large problem for winter-run Chinook salmon in drier year-types because freshwater flows during those years are typically low and reservoir storages are insufficient to provide for sufficient storage of cold water. Lack of projected impact to temperatures affecting winter-run Chinook salmon productivity in wetter years is not surprising or particularly positive news, but the revelation of higher egg mortality in drier year types (representing ~40% of all years) is a major negative outcome for BDCP.</p> <p>The additional loss of 1% of the total cohort at the egg stage cannot be dismissed as insignificant, especially for a critically endangered population that already suffers high egg-mortality during drier year types. First, the impact assessment ignores sub-lethal negative effects of temperature, which are known to be large at the high end of the Chinook salmon thermal tolerance range. See NMFS 2009 Biological Opinion. Second, the increase in egg mortality, as noted by the DEIS/DEIR, is very large in relative terms; to accept the DEIS/DEIR's lack of concern about increased egg mortality, one would have to conclude that current egg mortality is not a problem. Yet egg mortality and other sub-lethal negative effects of high temperatures are currently considered to be a substantial problem for winter-run Chinook salmon in some year types. Moyle 2002; Williams 2006; NMFS 2009 Biological Opinion at 235. A large increase in a stressor that is already considered to be a problem is, itself, a large problem. Similarly, the SacEFT habitat model projects substantial impacts to various life stages of winter-run Chinook salmon dwelling in the upper Sacramento River, which the DEIS/DEIR seeks to minimize (suggesting, for example, that absolute losses in spawning habitat of ~9% would be "small"). DEIS/DEIR at Table 11-4-18.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The effects analysis in Chapter 11, Fish and Aquatic Species, for Alternative 4A demonstrates that there would be minimal temperature-related effects of Alternative 4A on winter-run egg mortality (1% absolute reduction in egg mortality and 7% relative reduction for all water year types combined). For more information regarding the updated CALSIM II modeling, including the new preferred alternative please see Appendix 11C of the FEIR/EIS.</p>
1723	289	In another example of its selective emphasis of results that reflect positively on the project alternatives, the DEIS/DEIR reports that, on average, degree-days decrease by up to 5% during August (a good thing in terms of Sacramento winter-run Chinook salmon egg survival and larval development). DEIS/DEIR at 11-1322. However, the results also reveal increases of more than 5% in degree days (in most cases, a bad thing for winter-run Chinook salmon eggs and larvae) during June (of Dry and Critical years), July (Above Normal, Below Normal, and Dry), and September (of Below Normal years). Temperatures above a certain threshold can produce negative results whenever critical values are exceeded during the winter-run incubation period; reduced temperatures in some months of a given year and even reduced "average" temperatures throughout a year are meaningless if mortality or sub-lethal negative effects occur during the incubation period. As usual, when the Draft Plan and DEIS/DEIR focus on average results across all years, they overlook important impacts that occur in particular year types (each of which occurs a significant fraction of the time).	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The effects analysis in Chapter 11, Fish and Aquatic Species, for Alternative 4A demonstrates that there would be minimal temperature-related effects of Alternative 4A on winter-run egg mortality (1% absolute reduction in egg mortality and 7% relative reduction for all water year types combined). For more information regarding the updated CALSIM II modeling, including the new preferred alternative please see Appendix 11C of the FEIR/EIS.</p>
1723	290	The DEIS/DEIR's analysis that categorizes degree-day violations into color-coded "levels of concern" is scientifically unjustified. See, e.g., DEIS/DEIR at Tables 11.4.14 and 11.4.15. Table 11.4.14 defines as "no effect" temperatures that exceed the known limit of winter-run	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.

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		<p>Chinook salmon egg tolerance (56 degrees F) by 1 degree for up to 9 consecutive days and by 2 degrees for up to 4 days; the DEIS/DEIR is only marginally concerned about temperatures 3 degrees higher than the limit that persist for up to 4 days. The biological significance of the 56 degrees F temperature limit for winter-run Chinook salmon is well documented in the NMFS 2009 Biological Opinion, and this threshold has abundant support in the literature. Id.; Richter and Kolmes 2005. Optimum temperatures for incubation are somewhat lower than 56 degrees F. McCullough et al. 2001; Myrick and Cech 2004.</p>	<p>The California WaterFix Section 7 Biological Assessment refined the water temperature analysis for upstream waterways and did not include this level of concern analysis, nor does the FEIR/FEIS. The original purpose of the analysis was to explore differences between the proposed project and baseline in the frequency and magnitude of exceedances above temperature thresholds in a visually explicit manner. The effects analysis in Chapter 11, Fish and Aquatic Species, for Alternative 4A demonstrates that there would be minimal temperature-related effects of Alternative 4A on winter-run egg mortality (1% absolute reduction in egg mortality and 7% relative reduction for all water year types combined). For more information regarding the updated CALSIM II modeling, including the new preferred alternative please see Appendix 11C of the FEIR/EIS.</p>
1723	291	<p>Furthermore, this method of assessing temperature impacts to winter-run Chinook salmon eggs underestimates temperature problems caused by BDCP operations because it compares scenarios based on the number of days a temperature standard is exceeded at Bend Bridge. Bend Bridge is not the regulatory standard for temperature compliance (the actual TCP in any given year is a point generated in collaboration among federal agencies that must be approved by the SWRCB). Comparisons of relative performance between BDCP alternatives in the DEIS/DEIR and modeled baseline conditions at Bend Bridge do not necessarily reflect the actual magnitude or spatial extent of problems experienced by incubating eggs upstream. As a result of these and other issues, Tables like 11-4-15 in the DEIS/DEIR fail to provide accurate information on environmental impacts.</p>	<p>The degree-day analysis is one of several tools (i.e., SALMOD, Egg Mortality Model, IOS, OBAN, SacEFT, level of concern analysis, evaluation of water temperature differences by month and water year type) used to assess temperature impacts on winter-run Chinook salmon eggs. The lead agencies felt that Bend Bridge was a suitable location for the analysis of all salmonids, regardless of the location for temperature compliance. The California WaterFix Biological Assessment conducted a more comprehensive analysis of spatial and temporal extent of temperature effects in the Sacramento River that is recommended to the commenter (see CWF BA Section 5.4.2, Upstream Hydrologic Changes)</p>
1723	292	<p>The DEIS/DEIR fails to make a NEPA determination regarding temperature impacts of the Alternative 4 high outflow scenario, claiming:</p> <p>"Available analytical tools show conflicting results regarding the temperature effects of relatively small changes in predicted summer and fall flows. Several models (CALSIM, SRWQM, and Reclamation Egg Mortality Model) generally show no change in upstream conditions as a result of Alternative 4. However, one model, SacEFT, shows adverse effects under some conditions. ... In conclusion, Alternative 4 modeling results support a finding that effects are uncertain. Alternative 4 does not propose any changes to Shasta operating criteria, but modeled results are mixed and operations that match the CALSIM modeling are not assured. Model results will be submitted to independent peer review to confirm that adverse effects are not reasonably anticipated to occur."</p> <p>(DEIS/DEIR at 1322.)</p> <p>These claims are inaccurate, and the data demonstrates that operations will cause a significant impact under NEPA. First, the DEIS/DEIR does not present results of the Reclamation Egg Mortality Model for the high outflow scenario (H4) of Alternative 4, however, its mischaracterization of serious egg mortality outcomes for H3 suggests that similarly significant results may occur under Alternative 4 operations. Large flow reductions versus NAA (No Action Alternative) are projected during September and October in some year types for Alternative 4/H3 and in October under Alternative 4/H4. DEIS/DEIR Appendix 11C at 11.C.226-227. Water temperatures are affected by reductions in flow as temperature gain during the summer and early fall generally is inversely correlated with flow volume. Thus we would expect higher egg mortality under H4 than was previously reported (and inappropriately downplayed) for H3. Second, temperatures (and thus winter-run egg mortality) were expected to increase under Alternative 4/H4 as compared to H3 between July-September (see DEIS/DEIR at 1324) and from August through October (id. at 1328). Although it is not valid to measure temperature changes in percentage terms as the DEIS/DEIR does, the temperature increase described would appear to be substantial with</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>All impacts have NEPA determinations in the FEIR/FEIS. We have greatly modified the text of Impact AQUA-40 since the 2013 DEIS/DEIR and full descriptions for our determinations are provided.</p>

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		<p>potentially significant implications for winter-run Chinook salmon egg viability and juvenile rearing success. Third, the statement suggests that three independent models (CALSIM, SRWQM, and Bureau Egg Mortality) show "no change" in upstream conditions; however, these models are integrally linked, and the SRWQM (and the Reclamation Temperature Model) use CALSIM II inputs to predict temperatures in the upper Sacramento River. DEIS/DEIR Appendix 5A at 5A-A26 and Table A-2.</p>	
1723	293	<p>The Draft Plan's Effects Analysis describes the Bureau of Reclamation Salmon (egg) Mortality Model as follows:</p> <p>"Limited to effects of water temperature on eggs only; daily time step requires linear interpolation between monthly temperatures to compute daily temperatures; third in a sequence of models (CALSIM and Reclamation Water Temperature Model), so limitations of previous models are compounded."</p> <p>(Draft Plan at 5.2-19.)</p> <p>Furthermore, the SRWQM, that develops inputs for the egg mortality model, is known to have an error rate that is high relative to the tolerances of Chinook salmon eggs for temperatures above 56 degrees F and the model is known to underestimate temperatures and thus underestimate the impacts to winter-run Chinook salmon eggs. Quoting from the calibration and validation documentation for the model (RMA 2003), the August 2008 OCAP biological assessment reports: "Computed temperatures are generally within 3 degrees F or less of average observed data at each of the locations plotted. Computed temperatures tend to be slightly cooler than observed." 2008 Biological Assessment Appendix H at H-9. We also note that the chain of modelling that connects CALSIM model outputs to winter-run Chinook salmon egg mortality has failed to predict the Bureau's inability to maintain adequate temperatures for winter-run Chinook salmon incubation.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Regarding water temperature modeling, due to limitations of the available modeling tools and the limited ability to accurately predict future conditions (including real-time operational adjustments), the model outputs are intended to be used on a comparative basis and not used as predictive tools. Comparisons to actual thresholds should not be done without also comparing exceedance of the threshold under another scenario, such as a baseline or other alternative. In other words, the models are limited in their ability to predict an actual value for a temperature and it is inappropriate to use them in this way without comparing results to another scenario. Please see Appendix 5A for more information on limitations of the physical modeling tools used in this analysis. Regardless of their limitations, these models were developed by fisheries biologists and hydrodynamic modeling experts using the best available science at the time, and were deemed sufficient to make comparisons across project alternatives.</p>
1723	294	<p>Temperature thresholds for migrating, incubating, and rearing winter-run Chinook salmon are already frequently exceeded, even after the annual revision of TCP (temperature control point) to accommodate inadequate storage conditions at Shasta Lake. NMFS 2009 Biological Opinion at 234-236.</p> <p>There is adequate information to reach a conclusion, and the DEIS/DEIR's claim that information regarding temperature impacts is "incomplete or unavailable" is unjustified. Therefore, it is impermissible to fail to reach a NEPA determination of significant impacts of increased temperatures on winter-run Chinook salmon based on results of both of the temperature-egg mortality analyses conducted. See 40 CFR [Section] 1502.22.</p> <p>The Draft Plan and DEIS/DEIR demonstrate that, relative to the NEPA No Action Alternative (which incorporates climate change), both Alternative 4 EOS (H3) and "High Outflow Scenario" (H4) will cause substantial temperature impacts to winter-run Chinook salmon upstream.</p>	<p>Regarding water temperature modeling, due to limitations of the available modeling tools and the limited ability to accurately predict future conditions (including real-time operational adjustments), the model outputs are intended to be used on a comparative basis and not used as predictive tools. Comparisons to actual thresholds should not be done without also comparing exceedance of the threshold under another scenario, such as a baseline or other alternative. In other words, the models are limited in their ability to predict an actual value for a temperature and it is inappropriate to use them in this way without comparing results to another scenario. Please see Appendix 5A for more information on limitations of the physical modeling tools used in this analysis. Regardless of their limitations, these models were developed by fisheries biologists and hydrodynamic modeling experts using the best available science at the time, and were deemed sufficient to make comparisons across project alternatives.</p>
1723	295	<p>The SacEFT model reveals significant effects that the DEIS/DEIR inappropriately downplays. See DEIS/DEIR at 11-1319 (Table 11-4-18). Similarly, two models employed by the Draft Plan's technical appendix 5G find negative temperature effects on winter-run Chinook salmon arising from BDCP operations under Alternative 4. Failing to acknowledge the consistent finding of negative outcomes related to temperature by four very different modeling frameworks is not a credible interpretation of the results. The dramatic nature of the egg mortality impact is made even clearer when operations under the modeled</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The EIR/EIS analyzes all alternatives, including Alternative 4A. Changes have been made to the analysis and interpretation of SacEFT results for Alternative 4 in the Final EIR/S.</p>

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		<p>Alternative are compared to modeled current conditions (i.e. prior to climate change). The DEIS/DEIR describes these severe impacts as follows:</p> <p>"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 42% greater under Alternative 4, including climate change, compared to the CEQA baseline (Table 11-4-17). Egg incubation conditions according to the SacEFT model are predicted to be 26% lower under H3, including climate change, than under the CEQA baseline. Further, the extent of spawning habitat predicted by SacEFT would be 60% lower under H3, including climate change, compared to the CEQA baseline (Table 11-4-18), which represents substantial reduction in spawning habitat and, therefore, in adult spawner and redd carrying capacity. Exceedances above NMFS temperature thresholds would be substantially greater under Alternative 4 relative to the CEQA baseline."</p> <p>(DEIS/DEIR at 11-1325.)</p>	
1723	296	<p>Winter-run Chinook salmon are severely imperiled and already suffer from Project operations that lead to temperatures beyond this species well-documented tolerance levels. Moyle 2002; Williams 2006; Williams 2010; NMFS 2009 Biological Opinion, NMFS 2014 Final Recovery Plan. Increases in the magnitude, duration, and frequency of temperature impacts are a significant impact to this imperiled species and likely would violate numerous legal requirements including the ESA. The DEIS/DEIR's attribution of all temperature impacts to the anticipated effects of regional climate change is inaccurate, as evidenced by the scenario comparisons that incorporate climate changes. It is also misleading because it incorrectly assumes that (a) water project operations do not contribute to temperature impacts, that (b) water project operations cannot be changed to ameliorate the effect of current or future temperature impacts to winter-run Chinook salmon, and (c) that climate change and BDCP operations are not cumulative impacts.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter mischaracterizes the analysis in following ways:</p> <ul style="list-style-type: none"> -The analysis does not assume that water project operations do not contribute to temperature impacts. Instead, the analysis shows through modeling that the operation of preferred alternative, Alternative 4A, would not cause adverse effects or significant impacts to fish and aquatic species. -The analysis does not assume that water project operations cannot be changed. Instead, Alternative 4A considers future climate change impacts on temperature and have been developed to meet prior OCAP RPAs. -Climate change is included in modeling assumptions. Therefore, climate change is a part of cumulative effects. -A Section 7 consultation with NMFS and USFWS will be completed for this project. These agencies will determine whether the project will or will not cause jeopardy to the listed species or adversely modify their critical habitat <p>Please see Chapter 11, Fish and Aquatic Species, for more detail.</p>
1723	297	<p>Water project infrastructure significantly contributes to temperature impacts to winter-run Chinook salmon because water warms behind the Project dams before it is released into current winter-run spawning habitat, and because reservoir releases that are, in some years, lower than natural flow levels gain temperature more quickly than if full reservoir inflows were provided in those years. Moyle 2002; Williams 2006; Williams 2010; NMFS 2009 Biological Opinion, NMFS 2014 Final Recovery Plan. Equally important, feasible mitigation measures, including infrastructure changes (temperature control device, cold water curtains) and reoperation of Central Valley Project reservoirs are capable of reducing or ameliorating these problems now and in the future. See, e.g., Nickel et al. 2004; NMFS 2009 Biological Opinion. It is unacceptable that the DEIS/DEIR fail to consider feasible mitigation measures and alternatives to reservoir operations that would reduce or avoid temperature impacts to winter-run Chinook salmon. The claims that there are no feasible mitigation measures (AQUA-40 and AQUA-41) are not supported by substantial evidence and are not</p>	<p>With regards to the feasibility of Mitigation, please see Master Response 22 Mitigation.</p> <p>Regarding temperature related impacts on fish, the project proponents agree that water project infrastructure can lead to temperature impacts. Some of the alternatives analyzed in this EIR/EIS did lead to temperature impacts. The preferred alternative, Alternative 4A, however, did not cause any temperature related adverse effects or significant impacts to any fish species. Under Alternative 4A, Impacts AQUA-40 and AQUA-41 do not claim that there is no feasible mitigation both conclusions are that the impacts are less than significant. Please see Chapter 11, Fish and Aquatic Resources, of the EIR/EIS for more detail.</p> <p>Regarding feasible mitigation, there are a number of alternatives, some of which have water temperature effects and some that don't. For those that do have effects, the reoperation of reservoirs as a mitigation measure would fundamentally change the alternative and therefore, it would be a different alternative than that analyzed.</p>

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		scientifically credible.	
1723	298	<p>Any temperature-related impacts will, of course, depend on actual reservoir storages and flow release rates. However, BDCP modeling outputs reveal that the modeled operations will violate flow and/or storage (temperature) conditions required in the NMFS 2009 Biological Opinion. See section II(C), infra. While acknowledging that the four outcomes of the Alternative 4 outflow decision tree, "...have the potential to cause differences in upstream conditions or in-Delta flows in other seasons as well (i.e., summer and winter)," DEIS/DEIR at 11-51, the DEIS/DEIR also maintains that, "Alternative 4 does not propose any changes in Shasta Reservoir operating criteria, and CALSIM results show that Reclamation could operate Shasta in such a manner that it does not affect upstream storage or flows substantially as compared to the NAA [No Action Alternative]." DEIS/DEIR at 11-1322. These two statements are irreconcilable with the BDCP's projections. See also MBK Engineers 2014. To meet the storage requirements and temperature conditions required under the Biological Opinion, reservoir release patterns will be need to change from what has been modeled in the Draft Plan and DEIS/DEIR such that more water is stored upstream in certain years -- that will obviously influence flow conditions into and through the Delta in ways that have not been analyzed (it will also likely affect SWP/CVP Project deliveries in ways that have not been modeled). Thus, either the DEIS/DEIR and Draft Plan outputs and analysis are totally invalid, or the negative flow and temperature impacts to winter-run Chinook salmon described in the Draft Plan and DEIS/DEIR are likely, in which case the impacts are significant from a NEPA/CEQA point of view and impermissible from the ESA/NCCPA perspectives. Given the availability of modeling data, it is wholly inadequate to fail to provide accurate information about the likely impacts and to fail to identify whether significant impacts are likely to occur.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 30.</p> <p>As shown in the Table C-2-2-17, 18, 19 and 20 under Appendix 5A Section C of the Draft EIR/EIS simulated end-of-September Shasta storage under Alternative 4 are similar to the No Action Alternative (largest simulated reduction is about 6% under H3). The Draft EIR/EIS acknowledges that certain operations cannot be captured in the modeling exercise; therefore, effects of some RPA actions that cannot be simulated in the CALSIM II and other models, including implementation of fish passage and Shasta performance measures in the No Action Alternative, are analyzed in a qualitative manner. As noted in the Appendix 5A of the Draft EIR/EIS, CALSIM II model cannot adjust the set of predefined rules that represent the assumed regulations to simulate extreme events, such as a prolonged drought, or to perform statistical performance criteria, such as storage target objectives in an assumed percentage of years, or under climate change. For example, benefits that would occur due to inclusion of fish passage and temperature management RPA action at Shasta Lake are only considered qualitatively and described in combination with the quantitative results of the CALSIM II and water temperature models. EIR/EIS modeling of Alternative 4 H1 through H4 was based on a No Action Alternative model developed in 2010. Models always evolve as the understanding of the system and operations improves and the assumptions are better defined. MBK's independent modeling of the No Action Alternative included different assumptions than the EIR/EIS No Action Alternative, which was the basis for their independent modeling of Alternative 4. Furthermore, MBK's independent modeling of the Alternative 4 included different assumptions than the EIR/EIS Alternative 4 H1 through H4. Some of the differences in Alternative 4 assumptions include May – Oct north Delta diversion bypass flow operations, Delta Cross Channel gate operations, Old and Middle River flow and south Delta export operations, and discretionary summer export operations. Different assumptions in the MBK's modeling of the No Action Alternative and Alternative 4 result in different results from the EIR/EIS.</p> <p>Chapter 11, Fish and Aquatic Resources, in the Draft EIR/EIS presents an evaluation of the effects of the simulated Shasta storage conditions on the fish in the Sacramento River, including winter-run Chinook salmon, for each scenario of Alternative 4. These results are based on the modeling and limitations described above.</p>
1723	299	<p>Flow impacts on winter-run spawning and downstream migration:</p> <p>Negative impacts to the extent of inundated spawning and incubation habitat for winter-run Chinook salmon should be anticipated as a result of flow reductions projected under the DEIS/DEIR alternatives. Winter-run spawning begins in late-April and lasts through early-August; incubation begins with the onset of spawning and lasts through October, for some fraction of the population. Moyle 2002. Reductions in flow on their spawning habitat during this period represent the potential loss of spawning habitat and/or the dewatering of eggs that have already been deposited. Both should be considered negative effects to this endangered population that suffers both from reduced productivity (low survival rates) and extremely limited spatial distribution. Compared to the No Action Alternative (NEPA), the DEIR/DEIS project substantial flow reductions upstream of Red Bluff Diversion Dam under Alternative 4 operations for some year types in the July-October period for operational variants H3 (ESO) and H4 (HOS). These range from flows that are 5.3% lower than NAA (No Action Alternative) in July of Dry years under the H4 variant to flows that are 14% lower in Dry years during August of the H3 variant. DEIS/DEIR Appendix 11C at 11.C.-225 to -227. Thus, winter-run Chinook salmon that spawn in July or early August will have less available spawning habitat. Far from mitigating for low flows in the summer period, the higher flows expected during some water year types in May for both H3 and H4 would likely exacerbate</p>	<p>Please see response to comment 1723-1 regarding the change in preferred alternative from Alternative 4 to Alternative 4A. Flows in the location a months of winter-run Chinook salmon spawning are improved under Alternative 4A compared to Alternative 4.</p> <p>The analysis relies on changes in flows between an alternative and baseline. Reductions in flows do not always correspond to decreases in suitable spawning habitat (see weighted usable area curves in Gard's flow-habitat evaluations in USFWS 2003 and USFWS 2005). As a result, and combined with model error, small variations in flow were not called out as necessarily significant/adverse.</p> <p>The California WaterFix BA has incorporated available flow-habitat relationships in its analysis of Alternative 4A. Please refer to this document, Section 5.4.2, Upstream Hydrologic Changes.</p>

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		<p>the problem of low flows that are expected later. This is because fish that spawn in May will be attracted to deposit their eggs in areas that would be unavailable under the NAA but which are not likely to remain inundated when flows decline in the later incubation period (e.g. after July), some eggs that are deposited based on spawning habitat available in May are likely to be dewatered as a result of temporally asymmetric changes in flow projected in the DEIS/DEIR. Thus, losses to winter-run spawning and incubation habitat projected under Alternative 4 should be listed as a significant impact to productivity, spatial distribution (because the drivers of these impacts (temperature and flow) reduce spawning habitat in a non-random, spatially-explicit manner and spatial extent of winter-run Chinook salmon is already severely constrained), and life history diversity.</p>	
1723	300	<p>The SacEFT model projects large decline in the number of years with desirable spawning conditions for winter-run Chinook salmon. DEIS/DEIR at 1319 (Table 11-4-18). The DEIS/DEIR's lack of concern with the very large reduction in years considered to have "good" conditions for spawning or for juvenile migration demonstrates a poor understanding of both the behavioral ecology and conservation biology of Chinook salmon as well as for the requirement to protect critical habitat for this species. It is not true, as the DEIS/DEIR contends, that these negative impacts to winter-run productivity are only of concern "if the number of spawners is limited by spawning habitat quantity." DEIS/DEIR at 11-1319. Adverse impacts to spawning habitat may violate ESA protections for winter-run Chinook salmon critical habitat, regardless of the number of Chinook salmon spawners.</p>	<p>Please see response to comment 1723-1 regarding the change in preferred alternative from Alternative 4 to Alternative 4A. Flows in the location a months of winter-run Chinook salmon spawning are improved under Alternative 4A compared to Alternative 4.</p> <p>The commenter does not explain why the statement cited is not true. The justification for making the statement is that, if the species is not space-limited because the population is not large enough, as is currently the case with winter-run Chinook salmon, density dependent effects, such as redd superimposition, would not occur. If the population were to increase to a point when spawning habitat were limiting, effects to reproduction could occur.</p> <p>Regardless, the analysis of winter-run spawning considers several metrics combined and makes one final determination. Therefore, we rely on a weight of evidence approach. Because the other models showed limited biologically relevant effects, we concluded that the effect in not adverse/less than significant.</p>
1723	301	<p>Negative impacts to migrating juvenile winter-run Chinook salmon are also expected to arise from flow reductions anticipated under the DEIS/DEIR alternatives. Migration flows in the Sacramento River are a known stressor on winter-run Chinook salmon populations. NMFS 2009 Biological Opinion; NMFS 2014 Final Recovery Plan; Williams 2010. The Draft Plan acknowledges this at some points. Draft Plan at 3.3-139. Migration flow rates are also a key input into the modeling tools the Draft Plan relies on to calculate winter-run Chinook salmon juvenile migration success (IOS and OBAN). Draft Plan Appendix 5G.</p>	<p>As the commenter notes, there is acknowledgement of migration flow importance in the DEIR/EIS.</p>
1723	302	<p>Under analogous climate conditions, migration flows under Evaluated Starting Operations (Alternative 4, H3) would be lower than projected under current operations by 5-18% during November. DEIS/DEIR at 11-1329.</p>	<p>This is a correct statement.</p>
1723	303	<p>The DEIS/DEIR states that migration flows for winter-run Chinook under Alternative 4 will be greater than or equal to flows under the NAA [No Action Alternative] alternative, but again, this is contradicted by the modeling reported in the DEIS/DEIR flows appendix (Appendix 11C). Flows reported for Wilkins Slough in the "High Outflow Scenario" (H4) of Alternative 4 result in lower flows than the NAA in July (Dry years: flows up to 10.5% lower under Alternative 4 H4), August (Dry years: flows 5.4% lower) October (Below Normal years: flows 11.7% lower), and November (all year types: flows 8.5-15.6% lower). DEIS/DEIR Appendix 11C at 11C-230 to -232 (Table 6). Similar outcomes are projected at Verona, which is closer to the Delta. DEIS/DEIR Appendix 11C at 11C-233 to 11C-237 (Tables 7 and 8). Thus, flow reductions of the magnitude expected under Alternative 3 and 4 represent a significant impact Chinook salmon productivity (survival rates as specified by the Draft Plan in Objective WRCS1.1), and the asymmetrical timing of the flow reductions (unevenly distributed throughout the migration period) is a negative impact to life history diversity in this species arising from operations, contrary to the Draft Plan's objectives for winter-run</p>	<p>Statements such as this are generalized summaries of the modeling outputs. The modeling does show some months and water year types with flow reductions under Alternative 4 and the text has been modified to reflect this. Regardless, it was determined that these reductions would not be large or frequent enough to cause adverse effects or significant impacts to winter-run Chinook salmon migration. Further, Alternative 4 is no longer the preferred alternative; Alternative 4A now is. Please see the results of this analysis in the Final EIR/EIS, which finds no flow-related adverse effects or significant impacts to spring-run Chinook salmon. For more information regarding the updated CALSIM II modeling, including the new preferred alternative, please see Appendix 11C of the FEIR/EIS. For more information regarding impacts to winter-run Chinook and its associated mitigation measures please see Chapter 11 of the FEIR/EIS.</p>

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		(WRCS3.2).	
1723	304	<p>Impacts to juvenile winter-run Chinook salmon through-Delta migration:</p> <p>The DEIR/DEIS acknowledges that in-Delta flows that affect winter-run Chinook salmon migration success are expected to be reduced by 11-23%, on average, under the BDCP after the new north Delta diversions come on-line. DEIS/DEIR at 11-1330. However, this fails to accurately assess the problem. A review of the relevant analysis in the DEIS/DEIR flow appendix reveals that:</p> <ul style="list-style-type: none"> - With very few exceptions, flows are projected to be reduced in every month from November-April in every year type, under every operational variant (H1-H4) of Alternative 4. - The average flow reduction for any given month is exceeded (in about half of years) and the true impact on winter-run Chinook salmon populations is likely to be reflected by the maximum flow reductions more than it is by the "average" flow reduction; the maximum flow reduction is 28% in April for above normal water year types (and this is still only an average of like years; impacts in individual years of this type will exceed this average). - The average flows in the "High Outflow Scenario" (H4) are between 10-24% less than projected under the No Action Alternative and, in certain year types, the outflow reductions are greater (e.g. >26% in November of above normal and below normal years). <p>See DEIS/DEIR Appendix 11C at 11C-284 to 285 (Table 28). Given the importance of freshwater flows in the Delta to Chinook salmon survival in the Delta, it is unimaginable that such large-scale, pervasive reductions in Sacramento River flow could be anything but a moderate to major negative impact to winter-run Chinook salmon survival and to the species' continued existence. The scientific consensus is that river flow rates have a major impact on salmon survival rates through the Delta. See, e.g., Kjelson and Brandes 1989; Brandes and MacLain 2001; SWRCB [State Water Resources Control Board] 2010; Williams 2010; NMFS [National Marine Fisheries Service], Final Salmon Recovery Plan 2014 at 63, 127; NMFS 2013 Evaluation of Flow Effects. For example, Williams 2010 ranked the "Hydrograph Modification" in the Delta as among the highest stressors in the Delta for Chinook salmon generally. The NMFS 2014 Final Recovery Plan Stressor matrix for winter-run Chinook salmon rates "changes in delta hydrology" as a "very high" stressor. NMFS 2014 Final Recovery Plan, Appendix B Attachment A. And the Recovery Plan recommends as a high priority action "Develop, implement, and enforce new Delta flow objectives that mimic historic natural flow characteristics, including increased freshwater flows (from both the Sacramento and San Joaquin rivers) into and through the Delta and more natural seasonal and interannual variability." NMFS 2014 Final Recovery Plan at 127; see also NMFS 2009 Biological Opinion. The DEIS/DEIR itself states: "Plan Area flows have considerable importance for downstream migrating juvenile salmonids and would be affected by the north Delta diversions, as discussed above for winter-run Chinook." DEIS/DEIR at 11-1330.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The evaluation of the effects of Alternative 4A in the Final EIR/EIS includes specific acknowledgement that real-time monitoring and associated triggers would allow for adjustments to the North Delta Diversion operations to minimize and avoid impacts to migrating fish. Effects would be mitigated with a nonphysical barrier at the entrance to Georgiana Slough, which would reduce the entry of outmigrating juvenile salmonids into the low-survival interior Delta. Alternative 4A, does not include large-scale restoration. Restoration proposed would be designed to mitigate for lost habitat values.</p>
1723	305	<p>And the Draft Plan states:</p> <p>"For this Effects Analysis, it was assumed with high certainty that Plan Area flows have critical importance for migrating juvenile winter-run Chinook salmon. Agency biologist opinion during the August 2013 workshops generally thought high importance to be warranted."</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter is encouraged to review the documentation of the DPM to see how results were calculated (Draft BDCP Section 5C.4.3.2.2).</p>

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		<p>(Draft Plan at 5.5.3-24.)</p> <p>NMFS' 2013 evaluation of flow effects on survival indicates that survival under the HOS (high outflow scenario) and LOS (low outflow scenario) are likely to substantially reduce survival (by 10% or more in some years) of migrating winter-run Chinook salmon. NMFS 2013 Evaluation of Flow Effects. So it is not scientifically credible that the substantial reductions in freshwater flow projected by the DEIS/DEIR are likely to result in only a 1% decline (a 3% relative decrease) in juvenile winter-run survival under H3 compared to the NAA (No Action Alternative). DEIS/DEIR at 1331 (referencing Table 11-4-23). The claim in the text misstates the impact revealed in the accompanying table, which indicates a decline in survival of 4-5% in "drier" years. Such a disproportionately low decline in survival resulting from such large changes in freshwater flow rates argues that the DEIS/DEIR modeling approach understates the effect. Indeed, the Draft Plan's Effects Analysis indicates that agency biologists who participated in August 2013 workshop on Draft Plan effects were of the opinion that reduced Delta flows anticipated under the Draft Plan were more likely to be a "moderate negative change," contrary to the Draft Plan's conclusions that this is impact is a "low" magnitude negative effect. Draft Plan at 5.5.3-26.</p>	
1723	306	<p>The DEIS/DEIR analysis of through-Delta survival rates under the different alternatives is yet another example of its biased presentation and interpretation of results that overstates potential benefits and understates potential environmental impacts. Even if we accept that the absolute increase in loss of winter-run Chinook salmon juvenile migrants is as small as 1.4% (the value reported for dry years in Table 11-4-23), despite much larger decreases in freshwater flow rates, further declines in the survival rate of a species that has already declined to the point of being listed as endangered and which continues to decline today is a significant impact and declining winter-run Chinook survival is at odds with the Draft Plan's stated objective (WRCS1.1) of substantially increasing Chinook salmon survival in the short and long-term.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter is encouraged to review the documentation of the DPM to see how results were calculated (Draft BDCP Section 5C.4.3.2.2).</p> <p>Note that the effects analyses are all comparative and relative to the baseline. The small decrease in through-Delta survival is the effect of the alternative. The low survival that "is already believed to be a major constraint on spring-run Chinook salmon populations" is not an effect of the alternative. The alternative is not responsible for current conditions. As noted in previous responses, For Alternative 4A/California WaterFix, bypass flows, real-time NDD export adjustments based on fish presence, the inclusion of Environmental Commitment 16 Nonphysical Fish Barriers, and channel margin restoration are all included in order to limit the potential for effects. Monitoring will inform the success of these measures, and there is a performance standard developed in association with the permitting fish agencies for survival ≥95% of baseline survival in the NDD reach. Attainment of this standard will be monitored, with adaptive management being undertaken as necessary should the standard not be achieved.</p>
1723	307	<p>To put in context the DEIS/DEIR's interpretation of the increased losses to juvenile salmon migrating through the Delta, we look to the same document's interpretation of reductions in entrainment of winter-run Chinook salmon at the existing south Delta export facilities and reductions in survival during the incubation phase upstream. [Footnote 68: We do not agree that the DEIS/DEIR's calculation or interpretation of winter-run entrainment rates or the proportional impact of entrainment are valid; our presentation of those claims here is solely to illustrate the inconsistent standard the DEIS/DEIR applies to weighting negative impacts as compared to impacts that are perceived as benefits of the BDCP.] The DEIS/DEIR estimate that entrainment of winter-run Chinook salmon at the existing south Delta export facilities under Alternative 4 (H3) will decline from 1.4% of the total population to 0.6%, an "improvement" amounting to less than 1% of the population, and less than the projected increase in overall through-Delta mortality described in Table 11-4-23. DEIS/DEIR at 11-1313. The DEIS/DEIR does not conclude that winter-run entrainment reductions will be "small" or "only 0.8% of the total population," but instead it avoids the apparently small absolute effect of Alternative 4 operations (which result from its significant underestimate of current entrainment rates as a proportion of the population) and presents its results in</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4.</p> <p>The text for winter-run entrainment has been modified to reflect the comment.</p>

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		<p>terms of the proportional reduction in entrainment between Alternative 4 and the NAA. Table 11-4-10 purports to show that entrainment under Alternative 4 will decline between 18-70% as compared to the NAA; the maximum reduction (for wet years) is less than the maximum estimated increase in winter-run Chinook salmon egg mortality (76%, Table 11-4-17), but the DEIS/DEIR dismisses the latter effect as unimportant (see above).</p>	
1723	308	<p>Turbidity Impacts on through-Delta survival:</p> <p>The Draft Plan and DEIS/DEIR fail to adequately acknowledge and assess the impact of reduced turbidity as a result of CM1 on Chinook salmon survival through the Delta. Predation on Chinook salmon is known to increase under low turbidity conditions. Gregory 1993; Gregory and Levings 1998. Operation of CM1 and evolution of tidal marsh sites targeted by the Draft Plan (CM4) are both expected to reduce turbidity levels throughout the Delta, particularly downstream of the north Delta diversion. As described in our assessment of impacts to delta smelt, the Draft Plan and DEIS/DEIR both:</p> <ul style="list-style-type: none"> - underestimate the reduction of turbidity anticipated under the BDCP (particularly at the high end of the variation in this effect; - improperly credit actions that are expected to partially ameliorate this effect to the BDCP, even though these actions are properly part of the environmental baseline, and - incorrectly minimize the negative impact of turbidity reductions that they do report. <p>BDCP did not adequately model the effects of reduced turbidity on salmon survival, despite BDCP's estimate of significant reductions in downstream sediment as a result of CM1 operations. Draft Plan Appendix 5C at 5C.4-64; DSP Independent Science Review Panel Report 2014 at 58; see also DSC BDCP Comments June 2014 at 10. As a result, the DEIS/DEIR and Draft Plan likely overestimate salmon survival through the Delta and underestimate the adverse impacts of BDCP on winter-run chinook salmon survival.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4.</p> <p>The potential negative impact to turbidity/water clarity is acknowledged in the FEIR/S by inclusion of an environmental commitment to reintroduce the sediment to the water column in order to maintain Delta water quality. DWR will collaborate with USFWS and CDFW to develop and implement a sediment reintroduction plan that provides the desired beneficial habitat effects of maintained turbidity while addressing related permitting concerns (the proposed sediment reintroduction is expected to require permits from the Central Valley Regional Water Quality Control Board and USACE). USFWS and NMFS will have approval authority for this plan and for monitoring measures, to be specified in the plan, to assess its effectiveness. This is described in Appendix 3.G of the FEIR/EIS.</p>
1723	309	<p>Impacts on upstream adult migration:</p> <p>The Draft Plan and DEIS/DEIR fail to accurately assess impacts to upstream adult migration of winter-run Chinook salmon resulting from reduced flows below the new intakes. The DEIS/DEIR shows greater than 10% flow reductions (the DEIS/DEIR standard for impact to this variable) during March-May, during the peak months of winter-run migration. See DEIS/DEIR at 11-1332 (Table 11-4-24). This is a significant impact that is not accurately reported in the DEIS/DEIR. The impact would likely be reduced under the High Outflow Scenario of Alternative 4. See DEIS/DEIR Appendix 11C at 11C-288 (Table 30). In addition, by reporting the "average" reduction in the percentage of Sac River flow, the DEIS/DEIR understates the problems that will likely occur for Chinook migrants in certain months and year types. See id. (Showing that the maximum flow reductions at Rio Vista under H3 are in below normal years in March, and above normal and wet years in April.</p>	<p>As discussed in Impact AQUA-42 of Alternative 1A, a change of 20% could be of importance, which is a considerably greater difference than found under the alternatives, including the new preferred alternative, 4A (see Final EIR/EIS).</p>
1723	310	<p>The Draft Plan and DEIS/DEIR fail to adequately analyze likely impacts to spring-run Chinook salmon, the analysis that is available predicts severe impairment of spring-run Chinook salmon population viability, and the documents understate or ignore significant environmental impacts.</p> <p>The Draft Plan and DEIS/DEIR fail to adequately analyze potential environmental impacts to spring-run Chinook salmon. In the absence of results from a life cycle model [Footnote 69:</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4. Please see Master Response 31.</p> <p>As clearly described in Appendix 5.G, Fish Life Cycle Models, covariates of the spring-run Chinook salmon OBAN model either are not affected by the alternatives (curl and sea level height) or may be affected by the alternatives but in unpredictable ways (e.g., striped bass catch-per-unit-effort). Therefore, using the model</p>

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		<p>Although the Draft Plan indicates that at least one existing life cycle model (OBAN) has been developed for spring-run, see Draft Plan at 5.G-10, the DEIS/DEIR and Draft Plan fail to use the OBAN model to analyze impacts. The reasons for doing so are unclear. We and other reviewers have identified significant limitations and concerns with some of the existing modeling tools. See, e.g., Memorandum to Meral from J. Rosenfield, re: "Review of BDCP Effects Analysis Appendix G: December 22, 2011; Delta Science Program Salmonid Model Workshop 2011 at 18.], the documents fail to summarize/synthesize the impacts to various life stages of spring-run Chinook salmon into a single assessment of project effects to this species for each of the attributes of species' viability: abundance, spatial distribution, life history diversity, and productivity. See McElhany et al. 2000. Piecemeal analysis and conclusions regarding separate life stages, without a qualitative (or quantitative) framework for synthesizing the effects to attributes of viability across life stages leads to results that are unnecessarily fragmented and without proper context -- simply, they fail to address the important questions: "What will happen to this population of Chinook salmon under the Plan?" and "How do expected outcomes of the Plan compare with modeled baseline conditions, with and without consideration of cumulative effects such as climate change?" The DEIS/DEIR and Draft Plan should have relied on the DRERIP review process to assess impacts qualitatively (based on well-supported, peer-reviewed conceptual models) and to synthesize results, especially where quantitative models were unavailable or deemed inappropriate. See, e.g., Essex Partnership 2009; TBI letter to BDCP Steering Committee August 2009. Instead, the document largely ignores these reviews and instead reaches conclusions that are not supported by the available scientific information.</p>	<p>would have provided no more information than currently exists in the analysis.</p> <p>For a summary/synthesis of effects to spring-run Chinook salmon from Alternative 4, please see the Draft BDCP Section 5.5.4.5, Net Effects. For a summary/synthesis of effects to spring-run Chinook salmon from Alternative 4A, please see the California WaterFix Biological Assessment, Section 7.3. Chinook Salmon, Central Valley Spring-run ESU.</p> <p>The DRERIP process was used multiple times during development of the BDCP and informed the planning process. Some of the information in the original DREREIP models (most are from 2008-2010) is now outdated and has been supplanted with newer information that better reflects available scientific information.</p>
1723	311	<p>The Draft Plan and DEIS/DEIR fail to report potentially significant negative impacts to spring-run Chinook salmon arising from the project by improperly attributing negative impacts and by ignoring its own analysis.</p> <p>Both the Draft Plan Effects Analysis and DEIS/DEIR downplay or ignore significant impacts to spring-run Chinook salmon identified in their own modeling and overstate the potential benefit of BDCP Alternatives to this state and federally ESA-listed species.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4.</p> <p>The Lead Agencies respectfully disagree with this claim and there are no specific citations of where the commenter believes this has occurred.</p> <p>Regarding possible impacts to salmon see impacts AQUA-37 through AQUA-86, Chapter 11 of this Final EIR/EIS.</p>
1723	312	<p>Impacts to Spring-Run Chinook Salmon Upstream -- Egg Mortality and Spawning Conditions:</p> <p>As it does for winter-run Chinook salmon, the DEIS/DEIR projects increased egg mortality for spring-run Chinook salmon as a result of Alternative 4 operations. Both the SacEFT model and Bureau of Reclamation Egg Mortality model suggest very large declines in the frequency of good conditions for spring-run Chinook salmon egg incubation on the Upper Sacramento River. SacEFT projects a 35% decrease in years with "good incubation conditions" for spring-run Chinook under Alternative 4/H3 operations. The DEIS/DEIR describes increased egg mortality projected by the Bureau of Reclamation egg mortality model under BDCP Alternative 4/H3 this way:</p> <p>"The Reclamation egg mortality model predicts that spring-run Chinook salmon egg mortality in the Sacramento River under H3 would be similar to mortality under NAA in dry and critical years, less in dry years, but greater in wet, above normal, and below normal (11% to 29% greater) water years (Table 11-4-30). Relative increases of 11% mortality of the spring-run population under wet and above normal water years would be negligible to the overall population, particularly because this represents a 3% to 4% increase on an absolute scale. However, the 29% relative increase in mortality in below normal years would have an effect on the spring-run population. Combining all water years, there would be no effect of</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4.</p> <p>Reporting absolute, or raw, differences in addition to relative differences was necessary in this case due to mathematical issues associated with the very low mortality values (used as the denominator in the mathematical function). We could have also listed survival of fish, as opposed to mortality, which would indicate a very small change in survival on a relative scale. Ultimately, this is a mathematical issue and we reconciled it by disclosing absolute differences alongside the relative differences to illustrate this.</p>

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		<p>H3 on egg mortality (3% absolute change)."</p> <p>(DEIS/DEIR at 1345.)</p> <p>As with analogous impacts to winter-run incubation success, the DEIS/DEIR again seeks to minimize the importance of this negative impact. By referring to what it erroneously believes is a small absolute rather than obviously large relative increase in impact between operational alternatives, the DEIS/DEIR obscures the results to argue that this does not constitute a significant impact.</p>	
1723	313	<p>Temperature impacts to egg viability are currently considered a significant problem for spring-run Chinook salmon. See, e.g., NMFS [National Marine Fisheries Service] 2009 Biological Opinion at 259-260 and Figure 6-16; NMFS 2014 Final Recovery Plan, Appendix B Attachment B at B-36. Increasing that problem by 11-29% in 64% of years (the sum of wet, above normal, and below normal year-type frequencies, see Draft Plan at 5.2-16) exacerbates this existing problem and constitutes a significant impact.</p> <p>Furthermore, the DEIS/DEIR misrepresents its own findings regarding temperature increases in the mainstem Sacramento under Alternative 4/H4 during the holding and spawning periods for spring-run Chinook salmon. The document declares that, "[a]t Bend Bridge, total degree-days under H4 would be up to 5% lower than under NAA [No Action Alternative] during August and similar during other months (Table 11-4-21)." DEIS/DEIR at 11-1355. However, that same table displays increases in degree-days of greater than 5% in the Sacramento River during most years in June and July and during below normal years in September. The text is not supported by the results in this table, and the table shows significant increases in temperature impacts.</p> <p>Similarly, the DEIS/DEIR summary of Table 11-4-35 focuses exclusively on perceived temperature "benefits" that it (erroneously) expects to occur under Alternative 4/H1, but it ignores that temperatures in the Feather River would be higher in most years during September under Alternative 4/H3, see DEIS/DEIR at Table 11-4-35.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Chapter 11, Fish and Aquatic Species, for the analysis of effects, which finds no temperature-related adverse effects or significant impacts to spring-run Chinook salmon.</p> <p>The text for Bend Bridge has been updated with "for all water year types combined" to correctly reflect the statement.</p> <p>The text describing the effects of H3 on spring-run found in Table 11-4-35 properly reflects the data found in the table. When water year types are combined, as was done for this analysis, the results are correctly reported. The higher temperatures noted by the commenter are small differences in exceedance above the threshold between the baseline and H1 within individual water year types.</p>
1723	314	<p>Projected temperature increases, relative to NAA (No Action Alternative), would negatively impact spring-run Chinook salmon egg survival rates (a productivity impact) and disproportionately affect early-spawning salmon that would be exposed to the higher temperatures (a life history impact) -- such losses also strongly suggest a reduction in carrying capacity of the Feather River for spring-run Chinook salmon (an impact to abundance). See DEIS/DEIR at Table 11-4-41.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For more information regarding water operations effects on spawning and egg incubation habitat for spring-run Chinook please see Impact AQUA-58 in Chapter 11 of the FEIR/EIS.</p> <p>While the modeling used in this analysis represents the best available science, it should also be noted that due to inherent modeling uncertainties and the inability to predict actual future conditions (including real-time operational adjustments), modeling outputs should be used on a comparative basis only and are not intended to be used as predictive tools.</p>
1723	315	<p>The comparison of project alternatives to the NAA (No Action Alternative) removes the effect of climate change from the estimate of temperature impacts caused by operation of the state and federal projects; for example, temperatures in the Feather River under project alternatives are much, much higher than those that are expected under current climate conditions with current operations (Existing Conditions vs. either H1 or H4; Table 11-4-40). These dramatic increases in actual temperature conditions experienced by spring-run Chinook salmon spawning and incubating in the Feather River are likely to: (a) extirpate this population if they were not ameliorated or mitigated, for instance by re-operating the reservoir and/or providing passage beyond current dams to cooler habitats at higher</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 1 regarding the use of baselines in the analysis. The CEQA analysis, because it uses the existing conditions as a baseline, includes the effects of both the project and climate change. The alternatives, including the preferred alternative, are not responsible for climate change. In order to isolate the effects of the project, the NEPA analysis is also considered in determining the effects of the project for each impact, as is thoroughly described in Chapter 11.</p>

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		<p>elevations, and (b) result in significant changes to reservoir operations analyzed in the DEIS/DEIR and Draft Plan, which do not make any provision to adapt to climate change.</p>	
1723	316	<p>Despite these rather large predicted increases in temperatures experienced by holding, spawning, and incubating spring-run Chinook salmon in the Sacramento River and the resulting decrease in frequency of years with suitable holding or incubation conditions, the DEIS/DEIR finds that its own analytical tools present conflicting results on temperature and egg mortality in the Sacramento River. The DEIS fails to reach a NEPA finding on this effect and instead promise that model results will be submitted to independent scientific review. By contrast, the DEIR concludes that there will be no significant impact to egg incubation success of spring-run Chinook salmon on the Feather River, but it acknowledges that operations under H4 "could affect the cold water pool and fall temperatures" in spring-run spawning habitat and so it promises to submit these modeling results to independent scientific peer review as well. Both of these conclusions are improper; existing information shows that operations in combination with climate change will cause significant adverse impacts under both CEQA and NEPA. Reservoir reoperation will be required to adapt to climate change, yet the Draft Plan and DEIS/DEIR fail to examine changes to upstream reservoir operations to avoid or mitigate these impacts.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>NEPA determinations have been made on all impacts for Alternative 4 in the Final EIR/EIS.</p> <p>Regarding the possible impacts to salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS.</p>
1723	317	<p>The DEIS/DEIR concludes that, under NEPA, there will be no significant effects to spring-run Chinook salmon upstream as a result of the Draft Plan and Alternative 4 operations. This finding is contradicted by the comparisons referenced above and others. The CEQA analysis of Alternative 4 impacts to spring-run Chinook salmon upstream is starkly different from the result of the NEPA analysis:</p> <p>"Collectively, the results of the Impact AQUA-59 CEQA analysis indicate that the difference between the CEQA baseline and Alternative 4 could be significant because, under the CEQA baseline, the alternative could substantially reduce the amount of suitable habitat, contrary to the NEPA conclusion set forth above. There would be small to moderate flow-related effects of Alternative 4 on spring-run Chinook salmon in the Sacramento and Feather rivers and temperature-related effects in the Feather River. Both SacEFT and SALMOD predict reduced habitat conditions for spring-run Chinook salmon in the Sacramento River. Exceedances above NMFS temperature thresholds would be higher under Alternative 4 relative to Existing Conditions. Results would be similar among model scenarios."</p> <p>(DEIS/DEIR at 11-1374.)</p> <p>At a minimum, the CEQA analysis reveals that the Draft Plan cannot achieve its stated objectives of not modifying critical habitat for spring-run Chinook salmon. SRCS3.1; Draft Plan at 3.3-153 ("Implement covered activities so as to not result in a reduction in the primary constituent elements of designated critical habitat for spring-run Chinook salmon upstream of the Plan Area"). Clearly, the DEIS/DEIR analysis that the Draft Plan will fail utterly to achieve that objective or even alleviate the degrading effect of modeled changes to the regional climate.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 1 regarding the use of baselines in the analysis. The CEQA analysis, because it uses the existing conditions as a baseline, includes the effects of both the project and climate change. The alternatives, including the preferred alternative, are not responsible for climate change. In order to isolate the effects of the project, the NEPA analysis is also considered in determining the effects of the project for each impact, as is thoroughly described in Chapter 11.</p>
1723	318	<p>Impacts on Spring-Run Holding, Rearing, and Juvenile Migration: Upstream:</p> <p>Temperature impacts to spring-run Chinook salmon juveniles rearing in the Feather River and those preparing to spawn (holding) and may be severe. Under Alternative 4/H3 operations, the DEIS/DEIR reports substantial increases in the number of years when August temperatures will be 4 degrees F (8% increase) and 5 degrees F (19% increase) above the relevant temperature threshold (63 degrees F) for rearing juveniles. DEIS/DEIR at Table</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Chapter 11, Fish and Aquatic Species, for the analysis of effects, which finds no</p>

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		<p>11-4-43. Marine and Cech (2004) documented increased sub-lethal negative effects of on Central Valley Chinook salmon juveniles reared in temperatures above 17 degrees C, and Richter and Kolmes (2005) reference numerous studies that found that optimal temperatures for Chinook salmon juveniles are ≤ 17 degrees C. Furthermore, although the impact of water temperatures on developing embryos is not well-understood, it is believed that developing reproductive tissues exposed to high temperatures may be less viable than those that are formed under cooler temperatures. Berman 1990 (a Master's thesis cited in US EPA 1999) found that offspring of adult Chinook salmon that had been held for two weeks at temperatures between 17.5-19 degrees C had higher pre-hatch mortality and developmental abnormality rates and lower weight than a control group held at lower temperatures. NMFS Final Recovery Plan lists high water temperatures as a stressor of "high" importance for adult spring-run Chinook salmon holding on the Feather River. NMFS 2014 Final Recovery Plan, Appendix B Attachment 2 at B-10. Thus, the anticipated increase in the number of years in which August temperatures will exceed 17 degrees C could have large impacts on spawning success of Feather River spring-run Chinook salmon.</p>	<p>temperature-related adverse effects or significant impacts to spring-run Chinook salmon.</p> <p>While the modeling used in this analysis represents the best available science, it should also be noted that due to inherent modeling uncertainties and the inability to predict actual future conditions (including real-time operational adjustments), modeling outputs should be used on a comparative basis only and are not intended to be used as predictive tools.</p>
1723	319	<p>Migration and rearing flows would be reduced during critical months of some years under Alternative 4/H3 Operations. For example, the DEIS/DEIR projects reduced flows in the Feather River during December of Above Normal years and during January and March of Below Normal years. DEIS/DEIR at 11-1376 (Table 11-4-48). Reductions of flow in these months, with the frequency projected by the DEIS/DEIR suggests a significant impact to migration flows for spring-run Chinook salmon. The projected increase in Feather River flows during April and May under H4, see DEIS/DEIR at 11-1379, may benefit spring-run migration during those months, in some years; however, the improvement during two months combined with degraded conditions in earlier months of the spring-run migration period represents a large asymmetry in effects to different part of the life history spectrum represented by different migration timing; this is in stark contrast to the Draft Plan's stated objective (SRCS3.2) to, "Operate water facilities to support a wide range of life-history strategies for spring-run Chinook salmon without favoring any one life-history strategy or trait over another." Draft Plan at 3.3-153.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Chapter 11, Fish and Aquatic Species, for the analysis of effects, which finds no flow-related adverse effects or significant impacts to spring-run Chinook salmon. For more information regarding the updated CALSIM II modeling, including the new preferred alternative please see Appendix 11C of the FEIR/EIS.</p>
1723	320	<p>Rearing flows would be reduced in the high flow channel of the Feather River during June by up to 39% (DEIS/DEIR at 1369) under Alternative 4/H3. According to the DEIS/DEIR, June is the end of the spring-run rearing period and, as a result, the DEIS/DEIR does not consider this very large reduction in river flows to be biologically significant. This conclusion is erroneous as spring-run juveniles that follow a yearling life history strategy rear in the river through the summer months; dramatic reductions in flow represent a potentially serious loss of rearing habitat for these fish. The Delta Science Program Independent Review Panel expressed similar concerns regarding the Draft Plan's unsubstantiated assertion that this change in flows would not affect rearing Feather River spring-run or steelhead. DSP Independent Review Panel Report 2014 at 50. In addition, adult spring-run Chinook salmon hold in the river throughout the summer before spawning in the fall -- the loss of almost 40% of river flows expected from Alternative 4/H3 operations likely represents a serious impairment to this run-defining behavior. The DEIS/DEIR fails to acknowledge this very important impact to life history diversity of spring-run Chinook salmon; this contradicts the Draft Plan's stated objective of operating to avoid differential impacts to components of the spring-run life history distribution, see Draft Plan at 3.3-153 (Objective SRCS3.2), and the Draft Plan's aim to reduce stressors such as "predation, spatial structure, lack of rearing habitat, ... and altered migration flows." Draft Plan at 3.3-151.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Chapter 11, Fish and Aquatic Species, for the analysis of effects, which finds no flow-related adverse effects or significant impacts to spring-run Chinook salmon. For more information regarding the updated CALSIM II modeling, including the new preferred alternative please see Appendix 11C of the FEIR/EIS.</p>

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1723	321	<p>Entrainment and Predation Impacts on Spring-Run Juvenile Migration: Downstream:</p> <p>The DEIS/DEIR finds that reduced entrainment of spring-run Chinook salmon in the Delta will be a CEQA net benefit to this unique population under Alternative 4/H3 operations (Table 11-4-SUM1). This finding is not likely to be correct and lacks scientific support. As with all runs of migratory fishes, the DEIS/DEIR and Draft Plan net findings emphasize the benefits of potential reduced entrainment in the south Delta and they assume that there will be little or no entrainment or predation-related mortality at the North Delta facilities. See, e.g., DEIS/DEIR at 11-1341. Regarding entrainment, the Draft Plan and DEIS/DEIR simply assume the efficacy of these screens will be perfect or nearly so under all conditions throughout the life of the north Delta diversion. There is no certainty that entrainment related mortality at the North Delta Facilities will start or remain low. In fact, the Draft Plan's Appendix 5B found that it was not possible to be certain about the level of impact these screens will have on either Chinook salmon or steelhead. Draft Plan, Appendix 5B at 5B-304. This contradicts the Draft Plan's effects analysis, which asserts that there is a moderate level of certainty that the effect will be low. Draft Plan at 5.5.4-23. The DEIS/DEIR should have considered what would happen if this assumption was incorrect, even periodically (i.e. what if damage to, imperfect maintenance, or malfunction of the screens occurs with "x" frequency and results in "y" entrainment rate for a duration of "z" weeks).</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For a discussion of uncertainty regarding the efficiency of screens at the proposed north Delta intakes, please see California WaterFix Biological Assessment, Section 5.4.1.3.1.1.1, North Delta Exports.</p>
1723	322	<p>With regard to predation at the north Delta diversion, the DEIR/DEIS ignores analyses that show negative impacts. In addition to a bioenergetics model, on which it bases its findings, the Draft Plan (Appendix 5F) also applies a fixed predation model, based on observed entrainment rates at the Glenn-Colusa Irrigation District screens which are somewhat similar to those proposed for BDCP. These two models provide strikingly different predictions of predation on Chinook salmon; the bioenergetics model indicates predation rates at the NDD (north Delta diversion) will be <1% for all Chinook populations, whereas the fixed predation model estimates ~12-13% loss of juvenile migrants at the NDD for each population of Chinook salmon. Both models cannot be correct and the Draft Plan and DEIS largely ignore the result showing significant predation at the north Delta diversion. See, e.g., Draft Plan, Appendix 5F at 5.F-77. In reporting only the results that are more favorable to the BDCP, the Draft Plan and DEIS/DEIR miss the opportunity to learn from the different outputs of the two models. As the Delta Independent Science Review Panel noted, the high mortality of Chinook salmon at the GCID screening facility indicates that predators may aggregate at high densities near that structure; this suggests the same risk exists for the NDD. DSP Independent Science Review Panel Report 2014 at 52. Thus, the difference in projected predation rates between the two modeling approaches applied by the Draft Plan could reveal that its inputs to the bioenergetics model, including the range of predator densities at the GCID facility or their metabolism, were unrealistically low. The bioenergetics model methodology used to calculate potential predation rates arising from the presence of the North Delta diversion would not, apparently, predict existing mortality rates at the GCID screening facility; thus, a larger range of predator densities should have been modeled. Instead, the DEIS/DEIR and Draft Plan simply assume that one model (the fixed predation model) was completely wrong (despite the fact that it's based on a relevant, recent, local observation) and the other model is completely correct. This choice was not scientifically justified.</p>	<p>For the new north Delta intakes, bioenergetics modeling was used to estimate relative consumption of Chinook salmon by striped bass. The original model estimated consumption based on water temperature, striped bass size, striped bass density at the screen, and the density and size of prey encountered (Loboschefsky and Nobriga 2010; Loboschefsky et al. 2012). Another rough estimate of predation losses at the north Delta intakes was an assumption of a fixed 5% loss for each intake passed by outmigrating juvenile Chinook salmon, as proposed by NMFS. A complete description of methods and the resulting analysis can be found in the BDCP Appendix 5.F, Biological Stressors on Covered Fish, Section 5.F.0.2.2, Fish Predation and Section 5.F.3.2, Fish Predation Analysis.</p> <p>There are appreciable uncertainties in the analysis of predation loss, including unknown baseline levels of predation, uncertainty in the bioenergetics model parameters, and the comparability of the GCID intakes for estimating loss rates. As discussed for Alternative 1A, the GCID screen and the proposed north Delta diversion intake screens are substantially different. The GCID is located along a relatively narrow oxbow channel (about 10 to 50 meters wide) while the north Delta intakes would be located on the much wider channel of the mainstem lower Sacramento River (about 150 to 180 meters wide). In addition, the fish tested at GCID were relatively small (average length generally less than 70 mm; Vogel 2008) in comparison to the size of winter-run Chinook salmon that would generally occur near the north Delta intakes (average length generally greater than 70 mm; del Rosario et al. 2013), which could have resulted in different susceptibility to predation. For the purposes of the analysis of Alternative 4A, it is assumed that all juvenile salmon migrating down the mainstem Sacramento River would come in close proximity to the intakes, although there is high uncertainty with this assumption. However, the estimates of predation loss at GCID are for a single large diversion intake, while Alternative 4A would have three north Delta intakes. Thus, while factors unique to the GCID screen may increase the per screen predation loss estimates relative to the north Delta, the cumulative amount of intake structure proposed under Alternative 4A would be much larger than the GCID screen, increasing exposure of juvenile salmon to screen-related impacts. Overall, a fixed 5% loss per intake represents a conservative upper bound on predation loss.</p>
1723	323	<p>With regard to changes in South Delta entrainment, the methodology applied is not as precise as the outputs in the DEIS/DEIR suggest accuracy to the nearest single fish, as is implied in Table 11-4-25. See Draft Plan, Appendix 5B (modeling appendix showing the 95% Cis, which are not displayed in the DEIS/DEIR). The Delta Science Program Independent</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>

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		<p>Review Panel commented that the normalization procedure used by the Draft Plant to estimate South Delta entrainment effects across years tends to mask some of the variation and uncertainty related to different operational alternatives and the Panel found that the "variance calculations for salvage abundance and entrainment index are being calculated incorrectly." DSP Independent Science Review Panel Report at 54. We concur with these critiques and with the recommended method of calculating variance and the appropriate use of the normalized values (i.e., for qualitative purposes but not for modeling). The Delta Independent Science Board also recommended estimation of entrainment/predation impacts under different assumptions about diversion rates between north and south Delta diversion facilities that would reflect the difficulties and inherent inaccuracies associated with using monthly CalSim outputs to reflect daily export management decisions. Delta ISB 2014 at B-40.</p> <p>This brings us to the DEIS/DEIR estimate of the actual effect of reduced entrainment on spring-run Chinook salmon. With respect to the finding that effect of entrainment reduction resulting from CM1 operation under Alternative 4 will be a net benefit to spring-run Chinook salmon, the DEIS/DEIR again applies an opaque and inconsistent standard to evaluating impacts. The DEIS/DEIR states that entrainment of spring-run Chinook salmon will be reduced under Alternative 4/H3 from 5.3% on average across all years (as elsewhere, we find the "average across all years" metric to be misleading and without value) to 3.2% on average -- an absolute difference of 2.1% of the population. The NEPA conclusion states that this will be a "small" benefit, because it claims current predation losses are low; but for CEQA, it claims the entrainment reduction would be "substantial." DEIS/DEIR at 1341. By contrast, when the DEIS/DEIR found increased temperature-related mortality to spring-run incubating in the Sacramento River it concluded: "Relative increases of 11% mortality of the spring-run population under wet and above normal water years would be negligible to the overall population, particularly because this represents a 3% to 4% increase on an absolute scale." DEIS/DEIR at 1345 (emphasis added). So, when negative impacts occur, the DEIS/DEIR insists that absolute losses to the spring-run Chinook salmon of less than 5% are "negligible" or at least "not adverse" (see also DEIS/DEIR at 11-1341 (predation rates at the North Delta diversion), but when a perceived positive effect occurs (such as reduced south Delta entrainment) it is termed "substantial" even if it's absolute effect is 2.1%. This fluctuating, dual standard for evaluating the impact of positive versus negative effects is uninformative, misleading, and unacceptable.</p>	<p>In Chapter 11 of the Final EIR/EIS, Impact AQUA-57: Effects of Water Operations on Entrainment of Chinook Salmon (Spring-Run ESU) concludes that under NEPA, the effect of Alternative 4A would not be adverse and may provide some benefit. The CEQA conclusions states that impacts on spring-run Chinook salmon under Alternative 4A would not be significant and would in fact be beneficial because of the reductions in entrainment losses at the south Delta facilities across all water years compared to existing biological conditions. The NEPA analysis is compared to the No Action ELT Alternative while the CEQA analysis is compared to existing conditions.</p>
1723	324	<p>The Draft Plan applies a modification of Newman's (2003) methodology to estimate spring-run smolt survival through-Delta under different Alt 4 scenarios. EBC2_LLT (existing biological conditions 2-late long term) outperforms both ESO (evaluated starting operations) and HOS (high outflow scenario) in the early and late long term in this modeling (Table 5C.5.3-111, 5C.5.3-112, Table 5C.5.3-113, 5C.5.3-114 respectively), though it is not clear that any of these results is statistically significant. The Draft Plan should analyze these results using statistical techniques appropriate for paired-observations. If the results are significant, then it should conclude that EBC2 is superior to Alternative 4 variants with respect to spring-run smolt survival; if the results are not significant, then it should conclude that there is no detectable difference (using this modeling approach) between spring-run smolt through Delta survivals among alternative operations compared. In either case, the results indicate that spring-run survival through the Delta will not increase under BDCP operations, in contrast to the Draft Plan's objectives for spring-run (objective SRCS1.1), which include much higher survival rates than are currently observed. Application of the Delta Passage Model confirms that through-Delta survival of spring-run Chinook salmon juveniles is expected to decline as compared to current conditions under the LOS Alternative 4/H3.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise specific concerns regarding the analysis of effects on spring-run Chinook salmon in the EIR/EIS.</p> <p>Regarding impact analysis for salmon see impacts AQUA-37 through AQUA-86, Chapter 11, of this Final EIR/EIS.</p>

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		<p>Draft Plan at 5.5.4-17 to -18. The Draft Plan estimates that survival through the Plan Area will be similar to or slightly higher than the environmental baseline under the HOS using the same methods. Id. The DEIS/DEIR attributes slight (but not likely meaningful) improvements in survival under H4, especially in wet years, to high river flows.</p>	
1723	325	<p>The NEPA conclusion for spring-run Chinook salmon relies on outcomes of the Delta Passage Model, and finds that:</p> <p>"... through-Delta survival under Scenario H3 by juvenile spring-run Chinook salmon Alternative 4 averaged 29% across all years, ranging from about 24% in drier years to 38% in wetter years (Table 11-4-51). Scenario H3 survival was similar to NAA in both drier years (0.5% less survival, or 2% less in relative difference) and wetter years (2.5% reduced survival, or 6% less in relative difference) (Table 11-4-51). ... Average survival under Scenario H4 (high outflow) was 30.7%, compared to ... 30.3% for NAA."</p> <p>(DEIS/DEIR at 11-1382.) [Footnote 70: We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] and other reviewers have previously emphasized that the Delta Passage Model is not an appropriate tool for evaluating cumulative changes in survival for wild, spring-run Chinook salmon because a substantial fraction of this population migrate to the Delta as fry or parr-sized fish. Williams 2006; Williams 2010. DPM is based on the relative success of migrant-strategy, hatchery-produced salmonids (such as late-fall run Chinook salmon) and thus cannot be used to understand fry and parr mortality in the Delta. See Draft Plan at 5.C.5.3-65. Even applying DPM to large spring-run (or fall-run) smolt is inappropriate as these fish migrate through the Delta in a different season than do late-fall run or steelhead smolt; there is no reason to expect that survival rates (and even relative survival rates) in Delta channels remain unchanged across seasons as numerous influences on predator efficiency (temperature, light penetration, SAV coverage, etc.) may all change seasonally. Memorandum to J. Meral from J. Rosenfield December 21, 2011; NMFS 2013 Progress Assessment at 8; DSP Independent Science Review Panel Report 2014 at 30.]</p> <p>These results do not appear consistent with the conclusions previously drawn by NMFS, which indicate substantially lower survival of spring-run Chinook salmon under ESO LLT (evaluated starting operations-late long term) than under either EBC2 LLT (existing biological conditions 2-late long term) or HOS LLT (high outflow scenario-late long term), with survival generally reduced under the HOS LLT as compared to EBC2 LLT as well. NMFS 2013, Evaluation of Flow Effects on Survival in Vicinity of Proposed North Delta Diversions. Furthermore, we note that foraging spring-run Chinook salmon should be expected to experience higher through-Delta mortality than migrant strategy fish because (a) they are smaller, (b) they spend a longer time in the Delta, (c) foraging exposes fish to additional risk of predation compared with migratory behavior. Thus, the DEIS/DEIR's reliance on DPM (Delta Passage Model) outputs to draw NEPA conclusions regarding spring-run Chinook salmon survival through the Delta is not supported scientifically and it probably understates mortality impacts to spring-run Chinook salmon from implementation of the BDCP. Finally, neither the DPM nor Newman (2003) methodologies would account for the substantial decline in turbidity throughout the Delta that is expected to arise from operation of the north Delta diversion and/or restoration of tidal marshes (CM4) or the decline in river stage (corresponding to reduced flow volumes) that should be expected immediately downstream of the new diversion. Both reduced turbidity and reduced river stage will translate to greater light penetration and exposure of migrating Chinook salmon to predation pressures. Existing models of Chinook salmon survival through the Delta do not account for the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Note that the DPM is used to characterize differences among scenarios (i.e., NAA vs. Action Alternative), and uses the same assumptions about fish behavior and movement for all scenarios. The differences are derived from changes in flow that capture the differences in scenarios. The text acknowledges that the DPM is a model most pertinent to smolt-sized fish (>70 mm), and tools for fry-sized individuals were not available for use. Effects to smaller juveniles in terms of potential changes to habitat for rearing (riparian/wetland benches) were assessed in the California WaterFix BA submitted in August 2016. While there may be more recent data that could be considered for the DPM, it would not be practical to update the model for every new dataset; the DPM was refined over several years by a collaborative working group for the BDCP/California WaterFix process in association with the permitting fish agencies and is considered suitable for effects assessment.</p> <p>To the extent that proposed operations (and extensive restoration under the action alternatives) change Delta hydrodynamics, these have been captured in the modeling; tools to simulate turbidity over the appropriate time scales to inform models such as DPM are not available. It is acknowledged that the DPM does not inform the potential effects of extensive habitat restoration for fish entering such areas; this was analyzed with different tools such as habitat suitability analyses in the public draft BDCP.</p> <p>Turbidity conditions have been re-evaluated and a revised analysis is presented in the Final EIR/EIS. Turbidity discussion for all species is updated accordingly. Also, the revised Preferred Alternative includes an environmental commitment to reintroduce sediment diverted at the North Delta intakes to the Delta, at locations and in a manner to be approved by the fish and wildlife agencies as beneficial to Delta and longfin smelt habitat.</p>

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		increased susceptibility to predation that will arise from diversion of water and sediment at the new diversion facility; therefore, existing survival models are likely to overestimate survival under BDCP conditions relative to a NAA (No Action Alternative) -- this would tend to make comparisons of through-Delta survival less favorable to BDCP operational alternatives.	
1723	326	Several things are apparent from the DEIS/DEIR summary of through-delta survival net effects. First, the DEIS/DEIR project lower survival under Alternative 4/H3 operations compared to the NAA (No Action Alternative); this contradicts the documents finding that the proposed project will have no significant effect, especially if one factors in other negative effects upstream (see above) that the impacts assessment inappropriately ignores. Second, restoration of floodplain habitat in the Yolo Bypass that may benefit downstream rearing and migration success is inappropriately excluded from the baseline in the Draft Plan and the DEIS/DEIR, as described above. Third, none of the survival models indicate a likelihood that survival rates will significantly increase as compared to the status quo, which would be necessary to achieve the Draft Plan's through-Delta survival objective. Thus, the document fails to provide substantial evidence that the Draft Plan is likely to achieve its objectives for spring-run Chinook salmon survival.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The preferred alternative, 4A, is not an HCP alternative. Goals and objectives in an HCP context do not apply to this alternative. Please see Master Response 5 regarding BDCP Conservation Measures.
1723	327	Impacts to spring-run Chinook salmon juveniles -- roll-up:: The DEIS/DEIR largely estimate decreases in through Delta survival. Because the DEIS/DEIR finds that Alternative 4 operations produce only one result that is not "less than significant" for through-Delta survival (reduced entrainment), and that effect is a "benefit" to the species, one would expect to find a meaningful increase in predicted spring-run Chinook salmon through-Delta survival under Alternative 4 -- but that is not the case.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Under Alternative 4A, the Final EIR/EIS NEPA conclusion for effects on migrating spring-run Chinook salmon is that effect would not be adverse. The CEQA conclusion is that the impact would be less than significant. For more information see Impact AQUA-60 in Chapter 11 of the FEIR/EIS.
1723	328	It is unlikely that spring-run Chinook salmon will benefit from operations described under Alternative 4/H3, even when combined with habitat restoration actions that were not modeled. The Delta Science Program Independent Review Panel (2014) found: "The negative impact of reduced plan area flows should have been greater on Sacramento River species such as spring Chinook and steelhead that are dominated by migrant life histories. "Migrant life histories are less likely to benefit from habitat restoration activities, which are a key focus of the BDCP conservation measures. This implies that spring Chinook and steelhead may experience less benefit from BDCP actions than other salmonid species, or they may even experience a negative net effect in response to reduced spring flows. The key question, which deserves more attention in the BDCP, is whether the migrant life history will sufficiently benefit from conservation measures to offset moderate negative impacts related to reduced spring flows. This question is key for spring Chinook and steelhead that are composed mostly of migrant life histories." (DSP Independent Science Review Panel Report 2014 at 30.)	Please see response to comment 1723-327 regarding Chinook salmon. See Master Response 5 regarding BDCP Conservation Measures.
1723	329	The Draft Plan identifies an objective of improving survival of spring-run Chinook salmon juveniles emigrating from the San Joaquin basin (objective SRCS1.1). The Draft Plan suggests that several of its conservation measures will affect better survival for Chinook salmon emigrating from the San Joaquin River basin (including, CM1 operations, efforts to reduce illegal harvest, improvement of water quality conditions in the Stockton Deep Water Ship Channel, floodplain creation in the lower San Joaquin River, etc.). Yet the Draft Plan and the	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Given that the population has not been established it would be challenging to assess potential effects because life stage timing is not established. The new preferred alternative, 4A, will be subject to incidental take authorization under ESA Section 7 and CESA Section 2081(b); therefore it does not contain objectives

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		<p>DEIS/DEIR wholly fail to evaluate potential effects of the BDCP on the migration success of juvenile spring-run Chinook salmon entering the Delta from the San Joaquin River. Thus, both the Draft Plan and DEIS/DEIR fail to analyze whether the BDCP will attain its stated objectives. This is a major omission and failure to provide information readers will need to evaluate BDCP benefits to spring-run Chinook salmon abundance, productivity and spatial distribution.</p>	<p>related to any listed species. San Joaquin River spring-run Chinook salmon are part of an experimental population and are not subject to take prohibitions under NMFS' 4(d) rule for West Coast threatened salmonids.</p>
1723	330	<p>Impacts to upstream migration of adult spring-run:</p> <p>Adult spring-run Chinook salmon may begin their upstream migrations as early as late-March and as late as September, with peak migrations occurring in May and June. Yoshiyama et al. 1998; Moyle 2002. Adult salmon use olfactory cues to home to their natal rivers and streams. Healy 1991; Moyle 2002; Quinn 2005; Williams 2006. Thus, reduction of flows into and through the Delta from spawning tributaries, and the diversion of those flows, can result in confusion, delayed migration, straying, and failure to spawn. For instance, current operations of the CVP/SWP and reduced inflows from the San Joaquin River cause significant impacts on adult migration of fall-run Chinook salmon of the San Joaquin River. Marston et al. 2012. The Draft Plan describes the potential for reduced Sacramento River flows below the new north Delta Diversion to cause orientation problems for spring-run Chinook salmon adults as follows:</p> <p>"... The difference in Sacramento River flow at Rio Vista in April-May was more than 20% less in wet and above-normal years and similar in other water-year types under the ESO [evaluated starting operations]; as described for winter-run Chinook salmon, flows in March-May were similar or greater under HOS_LLT [high outflow scenario-late long term] compared to EBC2_LLT [existing biological conditions 2-late long term] (Table 5.C.5.3-235, Mean Monthly Flows (cfs) in Sacramento River at Rio Vista for EBC2, HOS, and LOS Scenarios, and Table 5.C.5.3-236, Differences between EBC2 Scenarios and HOS and LOS Scenarios in Mean Monthly Flows (cfs) in Sacramento River at Rio Vista, in Appendix 5.C). The importance of these changes to the homing ability of spring-run Chinook is unknown. In considering the results of the DSM2 fingerprinting results and the CALSIM flow analyses, it is concluded with low certainty that there will be a low negative change to adult migration Plan Area flows under the BDCP for upstream migrating adult spring-run Chinook salmon. The low certainty in these conclusions would be informed by monitoring and targeted research under the BDCP (e.g., examining migration success of tagged adult Chinook salmon under different flow regimes), with any adverse effects being addressed by adaptive management."</p> <p>(Draft Plan at 5.5.4-19)</p> <p>However, the impacts to spring-run adult migrations from flow reductions in the lower Sacramento River will be higher than estimated in the Draft Plan, as this summary avoids impacts to flows in the peak migration month of June and misstates the predicted flow modifications it does present.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The comment does not raise concerns with specific portions of the EIR/EIS. For more information on upstream effects on migrating spring-run Chinook salmon see Impact AQUA-60 in Chapter 11 of the FEIR/EIS.</p>
1723	331	<p>According to the referenced table (Table 5.C.5.3-236), average Sacramento River flows at Rio Vista (indicative of the flows that migrating Chinook salmon might use to orient) are expected to decline on average in every month of the spring and early summer in both the High Outflow and Low Outflow Scenarios, in both the early and late long term, when equivalent climate change assumptions are applied. The proportional declines vary by scenario and year-type. In May (the beginning of peak spring-run migrations) flows under</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4.</p> <p>The analysis considers the entire range of the ESO. This range represents the approximate starting operations of the north Delta diversions. The actual real time operations would be better refined than what CALSIM II modeling portrays.</p>

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		<p>the HOS (high outflow scenario) decline relative to EBC2 (existing biological conditions 2) (factoring in climate change) by more than 10% in critical years during the ELT (early long term) and by more than 9% in Wet years of the LLT (late long term); under the LOS (low outflow scenario), flow declines of greater than 10% are expected to occur in Below Normal, Above Normal, and Wet years. In June (also a peak migration month), reductions in flow exceeding 30% occur frequently (Wet and Above Normal year types of the HOS_ELT and HOS_LL, and Wet years in the LOS_ELT). Flows in July, the shoulder of spring-run migration timing, shows even greater reductions (>30% on average across all year-types in both HOS_ELT and HOS_LL, Critical years in LOS_ELT and LOS_LL). DEIS/DEIR Appendix 11C at 11.C-288 to -290. The DEIS/DEIR presents expectations of flow reductions at Rio Vista under each of the Alternative 4 operational scenarios (Table 30, DEIS/DEIR Appendix 11C at 11.C-288 to -290); the results show even greater declines than those described in the Draft Plan especially when flows are compared to baseline conditions -- under each operational variant, the Sacramento River's flow will be over 40% lower (up to 56% lower) in at least one year type during June. The loss of more than one-third and, in some cases, more than one-half of a River's flow is a large impact for Chinook salmon attempting to find and navigate to their natal streams. If the Draft Plan found low impact under the expectation of a 20% reduction in flow, we would expect that the magnitude and certainty of the impact would be higher when flow reductions of more than 30%, 40%, and 50% are projected. There is no credible scientific evidence that would support a finding of "low" potential impact under these conditions.</p>	
1723	332	<p>The DEIS/DEIR analyzes flow reductions on the Feather River during the spring-run adult migration period and finds that under H3 during this period, flow reductions of up to 53% would represent changes "of moderate to large magnitude"; yet the DEIS/DEIR also concludes that the effect would "would not affect spring-run Chinook salmon in a biologically meaningful way." DEIS/DEIR at 11-1375. Once more, there appears to be no scientifically credible evidence to support a conclusion of low or "less than significant" impacts to migrating spring-run Chinook salmon adults.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. This comment refers specifically to Alternative 4. Determinations for species that occur in several tributaries rely on all of these tributaries. They also rely on multiple scenarios (H1 through H4). Further, they rely on both the frequency and magnitude of flow reductions. In this case, because the effects are isolated to the Feather River in certain months and water year types, and are of limited magnitude, it is concluded that the effect would not be adverse.</p>
1723	333	<p>With respect to efforts to control illegal harvest (poaching) of spring-run Chinook salmon, the Draft Plan overstates the importance of the stressor in the Plan Area and the likely impact of the proposed conservation measure, CM17. For adult spring-run Chinook salmon, the Draft Plan assumes with "moderate certainty" that illegal harvest is an "attribute of moderate importance for spring-run Chinook salmon adults. Draft Plan at 5.5.4-14. Spring-run Chinook salmon may be the most susceptible of the salmonid species to poaching because, during the summer, they hold in small streams, away from population centers. See Moyle 2002; Williams 2006; Williams 2010. However, the "Illegal Harvest" conservation measure (CM17) is designed to increase enforcement of anti-poaching laws within the Plan Area. Draft Plan at 3.3-151 to -152; DEIS/DEIR at 11-233. Thus, while there could be some moderate (though uncertain and un-measurable) benefit to spring-run Chinook salmon of anti-poaching efforts upstream, where they are most vulnerable, the impact of poaching efforts "in the Plan Area" is unknown (highly uncertain) and likely quite small. Furthermore, the Draft Plan provides no evidence to support its claim that anti-poaching effort will produce measurable benefits (to say nothing of "high" effects) on the survival of spring-run juvenile salmon migrating through the Plan Area. Thus, there is no support for the Draft Plan's conclusion that its efforts to reduce illegal harvest will "...be a high positive change (i.e., decrease) in the illegal harvest attribute for spring-run Chinook salmon juvenile foragers, juvenile migrants, and adults due to CM17" or the implication that this stressor is of more than low (probably very low) importance in the Plan Area where the conservation measure is to occur. Furthermore, in the Plan Area, the magnitude of the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As stated in Section 5.5.3.1.5 of the 2013 Public Draft, the analysis related to CM17 reflected the input of DFW biologists and law enforcement officers (Roberts and Laughlin 2013). Alternative 4A, the preferred alternative, does not include Conservation Measure 17.</p>

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		<p>stressor and the ability of warden's to reduce it is likely to decline as passage improvements described in the Draft Plan are completed. The same arguments hold for other runs of Chinook salmon and steelhead, all of which are less susceptible to poaching overall than spring-run.</p>	
1723	334	<p>Neither the Draft Plan nor the DEIS/DEIR address potential effects of the BDCP on the migration of spring-run Chinook salmon into the San Joaquin River where it enters the Delta. This is known to be a current problem affecting fall-run Chinook salmon of the San Joaquin basin. Marston et al. 2012. Thus, both the Draft Plan and DEIS/DEIR fails to analyze the potential impacts to the Draft Plan's stated objectives. Draft Plan at 3.3-53 (Objective L.2.4) and Draft Plan at 3.3-133 (objective L3.4). Objective L.2.4 is intended to "provide flows that support the movement of adult life stages of native fish species to natal spawning habitats." The DEIS/DEIR also fails to analyze potentially important effects on spring-run Chinook salmon of the San Joaquin Basin of Conservation Measures intended to address low dissolved oxygen in the Stockton Deepwater Ship Channel (CM14). These are major oversights given that the Draft Plan states an intention to benefit spring-run Chinook salmon in the San Joaquin Basin when spawning populations there have been reintroduced.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 31.</p> <p>As noted in the rationale for Objective SRCS1.1 in the public draft BDCP, there is significant uncertainty in projecting any through-Delta survival rates in this subbasin. Given that the population has not been established it would be challenging to assess potential effects because life stage timing is not established. The new preferred alternative, 4A, will be subject to incidental take authorization under ESA Section 7 and CESA Section 2081(b); therefore it does not contain objectives related to any listed species. San Joaquin River spring-run Chinook salmon are part of an experimental population and are not subject to take prohibitions under NMFS' 4(d) rule for West Coast threatened salmonids.</p>
1723	335	<p>The Draft Plan and DEIS/DEIR fail to adequately analyze impacts to Central Valley steelhead, but the available analyses demonstrate that the Draft Plan is not likely to achieve Plan objectives and is likely to result in significant adverse impacts to the species.</p> <p>As with many other species, the Draft Plan fails to assess whether the BDCP will attain many of the conservation strategy's objective for steelhead. Draft Plan at 5.2-8. The failure to evaluate whether the Draft Plan is likely to achieve the through-delta survival objective is not scientifically justified. The Draft Plan's claim that it would have needed life-cycle models for steelhead that are unavailable is not accurate; because objective STHD1.1 concerns through-Delta survival only, there are existing modeling tools and analytical approaches that should have been used, albeit with caveats. Although the Draft Plan inappropriately applied DPM (Delta Passage Model) to interpret survival of spring, fall, and winter-run Chinook salmon (which migrate at smaller size than the fish whose movements and success were used to construct the DPM), it did not apply this model to projection of differential success rates for steelhead migrating through the Delta. Of course, caution in interpreting these results would still have been warranted for steelhead. See, e.g., Memorandum to J. Meral from J. Rosenfield re: Comments on Appendix G, December 2012.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 31.</p> <p>Evaluating whether the proposed project of an HCP meets an objective of the HCP does not necessarily mean that the EIS/EIR failed to analyze an impact. The ESA and NEPA/CEQA are completely different regulatory pathways.</p> <p>The analysis relied on the best available scientific tools and information at the time of analysis.</p>
1723	336	<p>The DEIS/DEIR relies on its improper use of DPM (Delta Passage Model) for Chinook salmon to conclude that, "...steelhead survival would not be expected to change more than 1% under Alternative 4." DEIS/DEIR at 11-1531. [Footnote 71: The change referred to is likely to be a decrease in through-Delta survival. Draft Plan at 11-1551.] Late fall-run Chinook salmon migrate at similar size and in similar season to steelhead suggesting potentially similar impacts. Yet this statement neglects to mention that the DEIS/DEIR anticipates decreased through Delta survival of late fall-run Chinook salmon under H1 as compared to the NAA (No Action Alternative) and in all Alternative 4 operational variants during wetter year types compared to current conditions. DEIS/DEIR at 11-1458 (Table 11-4-76).</p> <p>Similarly, the DEIS/DEIR concludes that "Alternative 4 would have no effect on steelhead migration success through the Delta" for San Joaquin steelhead." DEIS/DEIR at 11-1532. Its conclusion that steelhead survival would not change seems to indicate that adverse effects of BDCP on through-Delta flows offset any benefits from reduced steelhead entrainment at</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see the discussion of the effects of Alternative 4A on through-delta and San Joaquin River survival of migrating steelhead in Impact AQUA-96 of the Final EIR/EIS.</p> <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, Environmental Commitment 6 Channel Margin Enhancement, Environmental Commitment 15 Localized Reduction of Predatory Fishes, and Environmental Commitment 16 Nonphysical Fish Barriers. Overall, it is concluded that the impact on steelhead would be less than significant and no mitigation would be required.</p>

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		the south Delta export facilities, see DEIS/DEIR at 11-1476 (Table 11-4-77).	
1723	337	<p>In general, both the Draft Plan and DEIS/DEIR fail to use existing scientific information to evaluate the effects of CM1 on steelhead migratory survival, completely ignoring key scientific information including the 2013 NMFS Evaluation of Flow Effects on Survival in Vicinity of Proposed North Delta Diversions. See DEIS/DEIR at 11-1531 to -1532. In addition, Appendix 3G to the Draft Plan projects that steelhead populations will decline substantially for both Sacramento and San Joaquin basin fishes in the first 10 years of the BDCP (to extinction, in the latter case). Draft Plan, Appendix 3G at Table 4. This result is consistent with that described in NMFS testimony to the State Water Resources Control Board regarding necessary flow improvements on the lower San Joaquin River. NMFS Comments on the Phase I WQCP Update Phase 1, March 2013.</p> <p>Regardless of the methodology used, these analyses (and others, like NMFS Evaluation of Flow Effects on Survival in Vicinity of Proposed North Delta Diversions 2013, which the Draft Plan and DEIS/DEIR fail to utilize in their analysis) all demonstrate the Draft Plan is unlikely to achieve the increases in steelhead survival identified in the Draft Plan's biological objective (STHD1.1). As such, the DEIS/DEIR and Draft Plan lack any scientific evidence to conclude that the Draft Plan is likely to achieve its steelhead survival objective.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The effects analysis of Alternative 4A in Chapter 11 demonstrates that there would be no adverse effects or significant impacts on salmonids. Alternative 4A does not include objectives for steelhead survival.</p>
1723	338	<p>The Draft Plan and DEIS/DEIR overstate the potential value of conservation measures to steelhead juveniles migrating through the Delta and underestimates the potential negative effects on steelhead survival through the Delta. Specifically, flow is understood to be a key driver to the success of salmonids that are primarily attempting to migrate through the Delta; salmonids that are primarily focused on foraging, by contrast, may benefit differentially from increased food and rearing habitat in the Delta. The Draft Plan assumes that 95% of steelhead juveniles in the Delta are following a migrant strategy. Draft Plan at 5.5.6-3. We concur with the Delta Science Program Independent Review Panel finding that:</p> <p>"The effect of each attribute on migrant versus forager salmonids was examined in Chapter 5, but summary Figure 5.5.3-2 did not capture differences in the assumed relative abundances of these life histories among the species. Plan area flows were typically ranked as a moderate negative effect on migrant salmonids in the Sacramento River and a low negative effect on foragers. However, this attribute was ranked the same for each salmonid species regardless of the proportion migrants versus foragers assumed in the population. The negative impact of reduced plan area flows should have been greater on Sacramento River species such as spring Chinook and steelhead that are dominated by migrant life histories.</p> <p>"Migrant life histories are less likely to benefit from habitat restoration activities, which are a key focus of the BDCP conservation measures. This implies that spring Chinook and steelhead may experience less benefit from BDCP actions than other salmonid species, or they may even experience a negative net effect in response to reduced spring flows."</p> <p>(DSP Independent Science Review Panel 2014 at 30; see also Williams 2010; NMFS 2013 Progress Assessment at 4.)</p> <p>The findings in the Draft Plan and DEIS/DEIR regarding foodweb benefits to steelhead in the Plan Area are not scientifically supported because the vast majority of steelhead are not foraging in this location.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>This comment addresses the Conservation Measures that were proposed for the benefit of covered salmonids under the BDCP. Alternative 4A is not an HCP/NCCP and does not include Conservation Measures for salmonids.</p>

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1723	339	<p>The Draft Plan and DEIS/DEIR's failure to emphasize the important negative impact of flow reductions (and even status quo flows) to the 95% of steelhead that are primarily seeking to migrate through the Delta quickly is not supported by the best available science. For example, in describing the need for improved Delta inflows from the San Joaquin River to the Delta, NMFS stated:</p> <p>"Flow is undisputedly a key driver for [salmon and steelhead] survival...San Joaquin River flows must be augmented significantly from current levels in order to reverse the present trend of salmonid population declines in the basin. Survival rates in the San Joaquin River were only slightly greater than one percent in 2003 and 2004 and 12 percent in 2006, which was a very high flow year... We note that these survival rates are unlikely to support a viable salmonid population."</p> <p>(NMFS Comments on the Phase I WQCP Update Phase 1, March 2013 (emphasis added).)</p> <p>NMFS' comments also emphasize that habitat fixes generally cannot replace the need for increased flows in the lower San Joaquin River (but should supplement needed improvements in flows). Id. BDCP fails to consider any changes in upstream CVP reservoir operations in the San Joaquin Basin that could improve flow conditions.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis evaluates flow effects on steelhead using the Delta Passage Model, and acknowledges differences between steelhead and Chinook salmon, on which the model was based. This model was deemed the best available scientific tool.</p>
1723	340	<p>Meanwhile, the DEIS/DEIR and Draft Plan assume, without justification, that the BDCP will provide benefits to steelhead that are unlikely to occur. For example, the Draft Plan assumes with low certainty that reduced illegal harvest of steelhead will produce a low benefit to steelhead even though the stressor itself is likely to be of low importance (and even that is a low certainty conclusion). Draft Plan at 5.5.6-9. Another way of stating this outcome is that it is unlikely to produce any measurable effect to the steelhead population. Indeed, steelhead adults migrate through the Delta during winter months when river flows are typically high and these fish are relatively difficult to detect. Williams 2010. Thus, it is very unlikely that reduction of poaching in the Plan Area (as the Conservation Strategy specifies) is likely to have much of measureable effect on steelhead populations.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The evaluation of some conservation measures for HCP alternatives must be based on best professional judgment due to a lack of other information.</p>
1723	341	<p>The Draft Plan fails to support its claims regarding the effect of predation mortality on steelhead. Draft Plan at 5.5.6-8. To the extent that their aggressive behavior and relatively large size limits predation on steelhead in the Delta (steelhead are typically ~250cm when they reach the Delta), predation mortality in the Delta is not likely to be a direct limit on steelhead populations currently, so perceived low-level benefits from measures to control predation are unlikely to yield population-level benefits. Although steelhead that are lost, malnourished, entrained in diversion infrastructure, or otherwise stressed from poor migration conditions may be eaten by opportunistic predators, these are secondary effects; steelhead are relatively large fish when they migrate through the Delta and they are capable swimmers and are more aggressive than Chinook salmon. Moyle 2002; Quinn 2005; Williams 2006. Although predation in the Delta is probably not a major stressor for steelhead currently, ecosystem alterations anticipated under BDCP could increase steelhead exposure and susceptibility to predators in the future. For instance, the Draft Plan claims that tidal marsh restoration would provide "more shallow water habitat with less predators." Draft Plan at 5.5.6-9. However, this ignores the fact that (a) steelhead are not expected to make great use of these habitats because 95% of them are migrating quickly towards the Bay and ocean and (b) there is little evidence and no guarantee that these restored habitats will be low predation environments. Even if the promised invasive vegetation removal succeeds, predation rates may be accelerated in these environments because not all predators rely on submerged aquatic vegetation, such as avian predators or</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding the BDCP Effects Analysis.</p> <p>For more information on steelhead impact analysis see Impacts AQUA-91 through AQUA-104, Chapter 11, of this Final EIR/EIS.</p>

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		striped bass. In contrast to the statement in the Draft Plan, the DRERIP review concluded that the potential for increased predation associated with habitat restoration planned for the West Delta ROA and elsewhere was a potentially high magnitude negative impact. Essex Partnership 2009 at Appendix D.	
1723	342	The DEIS/DEIR and Draft Plan fail to address the potential impact of reductions in turbidity increasing predation risk. See our discussion of impacts of reduced turbidity for delta smelt and both sturgeon species.	Both the public draft BDCP and the RDEIR/SDEIS (developed and circulated in 2015, which included 3 new Alternatives including the new preferred alternative, 4A. Alternative 4A) included analysis of effects of less sediment. Under Alternative 4A, to the maximum extent practicable, the first and preferred disposition of the sediment removed by the North Delta Diversion will be to reintroduce it to the water column in order to maintain Delta water quality (specifically, turbidity, as a component of Delta Smelt critical habitat). DWR will collaborate with USFWS and CDFW to develop and implement a sediment reintroduction plan that provides the desired beneficial habitat effects of maintained turbidity while addressing related permitting concerns (the proposed sediment reintroduction is expected to require permits from the Central Valley Regional Water Quality Control Board and USACE). USFWS and NMFS will have approval authority for this plan and for monitoring measures, to be specified in the plan, to assess its effectiveness.
1723	343	For steelhead, as for most of the covered fish species, the Draft Plan largely ignores the weight of scientific evidence that improved flows are needed with respect to steelhead, in combination with other measures. See, e.g., NMFS, Comments on the Draft Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Salinity Objectives (Report), February 4, 2011 [Footnote 72: These comments are available online at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts020811/010411dpowell.pdf and are incorporated by this reference.]; CDFW 2010 Flow Criteria.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The analysis evaluates flow effects on steelhead using the Delta Passage Model, and acknowledges differences between steelhead and Chinook salmon, on which the model was based. This model was deemed the best available scientific tool.
1723	344	The Draft Plan and DEIS/DEIR fail to acknowledge significant negative impacts to steelhead arising from the project upstream of the Plan Area. Both the Draft Plan Effects Analysis and DEIS/DEIR downplay or ignore significant upstream impacts to steelhead that result from BDCP operational alternatives, particularly regarding egg mortality and spawning conditions. The DEIS/DEIR claims that Alternative 4 will have "negligible" impacts to spawning and egg incubation habitat for steelhead, but this conclusion is not supported by the analysis. For instance, it reports a relative decline of 10% in the weighted usable area for steelhead spawning on the Sacramento River. DEIS/DEIR at 11-1478 (Table 11-4-78). Also, under Alternative 4/H4, Sacramento River flows are expected to decline substantially during the spawning and egg-incubation seasons during May in below normal and wet years (9% and 18.3%, respectively); the DEIS/DEIR improperly concludes that these effects will be "small" and have no meaningful biological effect on steelhead spawning or rearing. DEIS/DEIR at 11-1507. There is no scientific basis for such conclusions; such substantial declines in flow are likely to have a significant biological effect that the DEIS/DEIR simply ignores. On Clear Creek, the DEIS/DEIR reports no change between Alternative 4/H3 and NAA [No Action Alternative], but it does indicate that flow declines in wet years relative to current conditions are expected to be as high as 38%. DEIS/DEIR at 11-1478. Similar degradation of flows and temperatures as compared to existing conditions are expected on: the Feather River, see DEIS/DEIR at 11-1480 to -82, -89 (Tables 11-4-80, 4-82, and 4-83; the American River, DEIS/DEIR at 11-1490 to -91; and the Stanislaus River, DEIS/DEIR at 1491.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Comment 332 regarding the method of determination when there are multiple tributaries, months, water year types, and scenarios to include in a determination. Comparisons to Existing Conditions include the effect of the alternative and climate change. Therefore, conclusions based on "degradation of flows and temperatures compared to existing conditions" must consider this, as they were in the EIR/EIS.
1723	345	The net effects in the Draft Plan and conclusions in the DEIS/DEIR fail to adequately account for these increases in upstream temperatures and their likely impacts to steelhead productivity, abundance, and spatial distribution in the future. They also reveal the Draft	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.

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		Plan is unlikely to achieve two of its stated objectives (STHD3.1 and STHD3.2, which indicate that the Draft Plan will be implemented so as not to negatively impact critical habitat or life history diversity of steelhead, respectively).	<p>The claim that upstream water temperatures were not adequately accounted for is untrue and unfounded. The sections in these documents consider upstream water temperatures. There is a general lack of water temperature increases due to Alternative 4. Therefore, there is little need to focus discussion on this finding.</p> <p>Evaluating whether the proposed project of an HCP meets an objective of the HCP does not necessarily mean that the EIS/EIR failed to analyze an impact. The ESA and NEPA/CEQA are completely different regulatory pathways.</p>
1723	346	As with other salmonids, it is clear that changes in reservoir operations will be needed to adapt to climate change and other cumulative impacts.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The proposed project (Alternative 4A) and other action alternatives would not change operational criteria for the SWP and CVP reservoirs in the Sacramento Valley. See Chapter 5, Water Supply, of this Final EIR/EIS, for more information on changes in SWP and CVP reservoir storage.</p> <p>Please see Master Response 25 regarding upstream reservoirs.</p> <p>Regarding the proposed project's (4A) possible impacts to salmon see impacts AQUA-37 through AQUA-86, Section 11.3.5.2, of this Final EIR/EIS. See Master Response 5 regarding NCCP requirements.</p>
1723	347	Juvenile steelhead rearing conditions on the mainstem Sacramento River would decline substantially under Alternative 4/H3 relative to the NAA (No Action Alternative). DEIS/DEIR at Table 11-4-78 (SacEFT projects an absolute decline in frequency of years with "good" conditions of 10 percentage points and a relative decline of 22%). The DEIS/DEIR suggests that the impact would be counterbalanced by a 2% absolute (10% relative) reduction in the incidence of juvenile stranding resulting from flow fluctuations.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>For more information regarding impacts to aquatic resources and its associated mitigation measures please see Chapter 11 of the FEIR/EIS, specifically Impact AQUA-95: Effects of Water Operations on Rearing Habitat for Steelhead.</p>
1723	348	The DEIS/DEIR concludes that more frequent degradation of steelhead juvenile rearing conditions would cause negligible effects, see DEIS/DEIR at 11-1498, is not supported by a scientific analysis and is contrary to the available biological evidence. For example, any countervailing effect of reduced juvenile stranding presumes that the years in which this improvement occurs are not the same years in which juveniles are expected to experience diminished quantity and quality of rearing habitat -- "saving" fish from stranding is not a benefit if the fish later die in a river that is too hot or has too little flow. Even were there no overlaps between years with reduced stranding and years in which the DEIS/DEIR anticipates impacts to steelhead rearing conditions, the number of years in which the latter (negative) impact are expected outnumber the years where reduced stranding is expected. Loss of "good" rearing conditions in more than an additional 2 years out of ten (22%) under Alternative 4 operations is a bad outcome for Sacramento River steelhead.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The commenter appears to have misread the text. The analysis does not claim that the "more frequent degradation of steelhead juvenile rearing conditions would cause negligible effects". Instead, it cites this as the exception to the pattern of generally negligible effects (DEIS/DEIR at 11-1498, lines 14-17).</p>
1723	349	Large reductions in flow (up to 50%) are projected during the juvenile steelhead rearing period (specifically, July through September) in the "high flow" channel of the Feather River, see DEIS/DEIR at 11-1499 and on the American River (August-September) under Alternative 4/H3. As reported for spring-run Chinook salmon, the frequency of temperature exceedances on the Feather River is expected to increase during July and August of most years. Similarly large increases in temperature are reported for the American River under Alternative 4 operations and the method of reporting such exceedances on both rivers vastly underestimates the likely negative effects. Temperature exceedances on the Feather and American Rivers are reported in the DEIS/DEIR as "degree-months" or the number of months in which the average temperature exceeds a certain threshold, but temperature thresholds reported for salmonids and steelhead are generally daily or multi-day temperature maxima. When temperatures exceed these short-duration thresholds on a	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-332 regarding the method of determination when there are multiple tributaries, months, water year types, and scenarios to include in a determination. The analysis reports all these findings both in text and in tables.</p>

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		<p>monthly basis, it means that fish are exposed to deleterious conditions for at least a large plurality of days during that month. Thus, the DEIS/DEIR's depiction of increased frequency in temperature exceedances that are greater than 5 degrees higher than the 63 degrees F temperature threshold (Table 11-4-43, Table 11-4-85) reveal that steelhead will experience temperatures greater than 68 degrees F (a temperature associated with negative effects to rearing steelhead; Reese and Harvey 2002) for most of those months. The table does not capture the number of months/years in which temperatures will exceed steelhead thresholds for many days (when the monthly average temperature remains below the threshold), even though severe negative impacts to rearing steelhead juveniles will occur in these months. As a result, the DEIS/DEIR dramatically understates the likely adverse temperature impacts on steelhead. We note that predicted reductions in the frequency of temperature exceedances during June under Alternative 4 versus NAA (Table 11-4-43, Table 11-4-85) do not mitigate for the high temperature impacts that are projected to occur later in the spring or summer, especially because actual temperatures are predicted to exceed critical steelhead temperature thresholds much more frequently in June relative to current conditions.</p>	
1723	350	<p>The DEIS/DEIR is inconsistent and contradictory regarding its assessment of the impact of flow reductions on steelhead migration upstream of the Plan Area. Flow reductions on major steelhead spawning rivers during the steelhead migration season represent potentially serious impacts to migration and adult survival. For example, the DEIS/DEIR appropriately finds that under Alternative 4/H3 operations on the Feather River, "The substantial reductions in flows during drier water years would have biologically meaningful effects on migration conditions during September through March." DEIS/DEIR at 11-1536. In contrast, the DEIS/DEIR concludes that under Alternative 4/H1 the significant flow reductions would have no effect "...because they occur in only one of seven months." DEIS/DEIR 11-1525. This rationalization ignores the potential survival and life history impacts to steelhead on the Feather River that can occur from unsuitable adult migration and contradicts the Draft Plan's objective to implement operations in a way that does not differentially impact particular parts of the life history range of steelhead.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis considers the effects of flow reduction on migrating steelhead based on the different operational scenarios, which yield different results based on the operations. For more information regarding impacts to aquatic resources and its associated mitigation measures please see Chapter 11 of the FEIR/EIS.</p> <p>For more information regarding modeling results utilized in the fish analysis please see Appendix 11C of the FEIR/EIS.</p>
1723	351	<p>There is no scientific support for the DEIS/DEIR claims that November flow reductions under Alternative 4/H3 (and other operational variants) on the Sacramento River above Red Bluff in all water year types (declines from 7.9%-16.3%, see DEIS/DEIR Appendix 11C (Table 4)) are "isolated" and will not have meaningful biological effect, see DEIS/DEIR 11-1520. The reluctance of the DEIS/DEIR to acknowledge impacts to steelhead migration resulting from reduced fall flows is not scientifically supported.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis of Alternative 4A in the Final EIR/EIS does acknowledge impacts on steelhead on the Sacramento River above Red Bluff under H3_ELT relative to existing conditions. For more information regarding impacts to aquatic resources and its associated mitigation measures please see Chapter 11 of the FEIR/EIS.</p> <p>For more information regarding modeling results utilized in the fish analysis please see Appendix 11C of the FEIR/EIS.</p>
1723	352	<p>The Draft Plan fails to define adequate objectives for viability of both sturgeon species.</p> <p>The southern distinct population segment (DPS) of green sturgeon is a federally-listed threatened species. In the Central Valley, its current spawning, egg incubation, and early rearing range falls entirely in the area downstream of Anderson, CA on the Sacramento River to and through the Plan Area. Israel and Klimley 2008; NMFS 2009 Biological Opinion at 125. White sturgeon spawning is currently believed to occur in the Sacramento River only from Colusa to the gauge at Verona, though spawning has been detected on the San Joaquin River, with rearing occurring throughout the Plan Area. Israel et al. 2009. Both species are</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis of effects evaluates a wide range of effects, including predation and the flow-abundance relationship, which can be found in Appendix 5.F, Biological Stressors on Covered Fish, and 5.C, Flow, Passage, Salinity, and Turbidity, respectively.</p> <p>Please see Master Response 5 regarding the use of biological goals and objectives in BDCP.</p> <p>In addition, the EIR/EIS analyzes potential impacts on green and white sturgeon under all project alternatives</p>

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		<p>expected to have occurred on other larger rivers in the Central Valley, though there are no recent records from these other waterways. Both species are anadromous, meaning they spend some portion of their post-juvenile life history in marine environments. Thus, spawning, larval, and juvenile life stages of both of these covered species occur within the Plan Area or reaches of the Sacramento River where flow and water quality are significantly affected or controlled by operations of the SWP and CVP.</p>	<p>considered in the EIR/EIS. For more information, please see Chapter 11, FEIR/EIS.</p>
1723	353	<p>The Draft Plan's presentation of global goals and objectives for green sturgeon is confused, conflicting, and not specific. For instance, whereas the global goal for endangered species such as delta smelt is to remove them from the endangered species list through restoration of their abundance and distribution, see Draft Plan 3.3-107, the Draft Plan identifies a global goal for green sturgeon that is to ensure that they use habitats they currently use and to maintain a stable population size and age structure. Draft Plan at 3.3-190. Clearly, this is an inadequate goal for a federally-threatened species that is at risk of extinction because of low abundance and a greatly restricted geographic range. See, e.g., NMFS 2009 Biological Opinion. Fortunately, this erroneous global target is contradicted by global objectives that call for increased abundance, productivity, spatial distribution, and life history and genetic diversity, but, none of these global objectives are SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound], so they fail to set the context for what the BDCP will do to serve these larger conservation aspirations. The description of global goals and objectives for white sturgeon is identical to what is described for green sturgeon and similarly flawed.</p>	<p>Please see response to comment 1723-352 BDCP impacts and sturgeon.</p>
1723	354	<p>The green sturgeon productivity objective GRST1.1 is too vague to understand or to use in evaluating the adequacy of conservation measures or to assess the efficacy of the BDCP as it is implemented (i.e. for adaptive management). See also NMFS 2013 Progress Assessment at 15. Another objective related to green sturgeon productivity (GRST1.2; to eliminate stranding in migration corridors of the Yolo Bypass, see Draft Plan at 3.3-193) is actually a stressor reduction target (as it refers to a particular stress on adult survival) but it is at least close to being SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound]. Unfortunately, the Draft Plan has no objectives for improved spatial distribution or life history and genetic diversity for this species -- issues that are identified as important in the preceding statements of global objectives and in the existing Biological Opinion. NMFS 2009 Biological Opinion at 558. Again, the descriptions of white sturgeon BDCP objectives are identical to those provided for green sturgeon in the Draft Plan and they are inadequate for the same reasons.</p>	<p>Please see response to comment 1723-352 BDCP impacts and sturgeon.</p>
1723	355	<p>The Draft Plan and DEIS/DEIR ignore several effects of the BDCP that are each likely to cause significant negative impacts on survival of sturgeon juveniles in the Plan Area and upstream. Operation of the new North Delta Diversion (CM1) likely will cause significant impacts to both species that are not reported in the DEIS/DEIR, and the Draft Plan and DEIS/DEIR ignore the cumulative impacts on these two species.</p> <p>Because the Draft Plan's objectives for the sturgeon species are unacceptably vague, it is not possible to evaluate whether the Draft Plan is likely to achieve such objectives. Still, the DEIS/DEIR indicate that BDCP will cause significant environmental impacts to both sturgeon species and prevent attainment of conservation objectives. Alone and cumulatively, these impacts represent potentially devastating impacts to both sturgeon species.</p>	<p>Please see response to comment 1723-352 BDCP impacts and sturgeon.</p>
1723	356	<p>Sturgeon larval and juvenile life stages are most susceptible to major stressors such as entrainment, low migration/dispersal flows, and predation. Young-of-the-year green</p>	<p>The Lead Agencies appreciate the reiteration of this knowledge. Additional information on the species can also be found in the Draft BDCP in Appendix 2A.8, Green Sturgeon (<i>Acipenser medirostris</i>), and Appendix</p>

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		<p>sturgeon are present in the middle and lower Sacramento River from April-October (larvae) and from August through March (juvenile). All stages of white sturgeon are present in the lower Sacramento River, with larvae present from February-May and the smallest juveniles present from April-June. Israel et al. 2009. Larval and young-of-the-year juvenile sturgeon are expected to be most abundant following spawning seasons characterized by high river flows. Kolhorst 1991; Moyle 2002; Israel et al. 2009. The spawning cues for green sturgeon are not known, but they are believed to be analogous to those for white sturgeon, with spawning being triggered by high river flows. NMFS 2009 Biological Opinion at 127.</p>	<p>2A.9, White Sturgeon (<i>Acipenser transmontanus</i>).</p> <p>No specific comments are made on the EIR/EIS.</p>
1723	357	<p>Larval and Juvenile Sturgeon Migration -- Flows Downstream of North Delta Diversion:</p> <p>Migration and dispersal of juvenile and larval white sturgeon will likely be significantly and adversely affected by reduced flows below the north Delta diversion. The DRERIP (Delta Regional Ecosystem Restoration Implementation Plan) life history conceptual model for green sturgeon indicates that the volume of flow in the middle and lower Sacramento River is a stressor that can limit transport and dispersal of larval and juvenile green sturgeon. Israel and Klimley 2008 at 32; the white sturgeon conceptual model indicates the same potential stressors for that species, Israel et al. 2009 at 36, and rates "flow operations" as the stressors with the highest possible importance and understanding for this species, id. at 43. Compared to EBC2 LLT (existing biological conditions 2-late long term), flows below the new diversion would be substantially lower under both the low and high outflow scenarios; under the LOS (low outflow scenario), flows will be reduced between 11.7%-20.4% on average, and under the HOS (high outflow scenario), flows will be reduced between 5%-18.9% on average. Draft Plan at 5.5.8-21 to 5.5.8-23 (Table 5.5.8-9). Worse, the flow reductions are greatest during above normal and wet years (up to 28% in the HOS and 28.5% in the LOS, see id.), the very years in which sturgeon species are likely to spawn.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Larval and juvenile sturgeon migration effects were evaluated in coordination with NMFS biologists at Wilkins Slough, Verona, and Red Bluff in the Sacramento River and at Thermalito Afterbay and the confluence with the Sacramento River in the Feather River. In addition, an evaluation of Delta outflow was conducted because a correlation exists between sturgeon year class strength and Delta outflow. Please see Appendix 5C, Sections 5C.5.2.13.2.7 and 5C.5.3.13.2.8 for details. These locations span the range of sturgeon in the Central Valley upstream of the bays such that if there were any effects, they should be seen at these locations. Also, see Chapter 11 in the EIR/EIS for analyses on potential impacts to sturgeon both within and upstream of the Delta. These analyses concluded that impacts to sturgeon would be less than significant and not adverse.</p>
1723	358	<p>Anticipated average flow decline in the August-March period, when green sturgeon juveniles would be in the lower river, are dramatically lower under BDCP Alternative 4 than under the environmental baseline in the late-long term, and the reductions are greater than those identified above affecting white sturgeon juveniles. For example, flows in September under the low outflow scenario would be 49% less than under the baseline on average across all year types, and 57.4% and 70% lower in the vital above normal and wet years, respectively. See id. Substantially lower flows downstream of the new north Delta diversion are expected in nearly every year type of every month under Alternative 4/H3 ("evaluated starting operations"). See also DEIS/DEIR Appendix 11C at 11C-284 (Table 28). These significant reductions in flow are likely to result in significant adverse impacts on juvenile survival of both sturgeon species that is contrary to the Draft Plan's conservation objectives. See Draft Plan at 3.3-190 (GRST1.1); id. at 3.3-198 (WTST1.1).</p> <p>Despite these significant reductions in flows and the prior acknowledgement of their importance, the Draft Plan disregards its own findings about the importance of river flows in the lower Sacramento River and about the large changes anticipated under Alternative 4. It identifies rearing habitat has a major stressor on both green and white sturgeon, Draft Plan at 3.3-190, 3.3-198, and it acknowledges that flow management may affect larval and juvenile rearing habitat "upstream of the Plan Area." Draft Plan at 3.3-191.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Larval and juvenile sturgeon migration effects were evaluated in coordination with NMFS biologists at Wilkins Slough, Verona, and Red Bluff in the Sacramento River and at Thermalito Afterbay and the confluence with the Sacramento River in the Feather River. In addition, an evaluation of Delta outflow was conducted because a correlation exists between sturgeon year class strength and Delta outflow. Please see Appendix 5C, Sections 5C.5.2.13.2.7 and 5C.5.3.13.2.8 for details. These locations span the range of sturgeon in the Central Valley upstream of the bays such that if there were any effects, they should be seen at these locations. Also, see Chapter 11 in the EIR/EIS for analyses on potential impacts to sturgeon both within and upstream of the Delta. These analyses concluded that impacts to sturgeon would be less than significant and not adverse.</p>
1723	359	<p>The Draft Plan concludes with "moderate" certainty that the BDCP will: "... result in a moderate negative change to migration flows for green sturgeon larvae and a low negative change for juvenile green sturgeon in the Feather River, and a low negative change for white sturgeon juveniles in the Feather River." Draft Plan at 5.5.8-19. Despite this, the Draft</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Further examination of this issue has occurred with development of the new preferred alternative,</p>

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		<p>Plan does not regard the projected huge changes in flow downstream of the north Delta diversion as problematic. Rather, it states:</p> <p>"Given that most green and white sturgeon occupying the Plan Area are likely to be from the Sacramento River region, it is concluded with moderate certainty that there would be a low negative change to Plan Area flows because of diversions at the north Delta intakes, for juvenile and adult green sturgeon; and for larval, juvenile, and adult white sturgeon ... flows on the Sacramento River below the north Delta intakes, the main migratory pathway ... would be lower; therefore it is felt that a low negative change is warranted."</p> <p>(Draft Plan at 5.5.8-24 (emphasis added).)</p> <p>The conclusion that flow reductions represent a "low" impact change for either sturgeon species is not supported by the best available science, particularly because it impacts "most green and white sturgeon occupying the Plan Area" as they migrate through their "main migratory pathway".</p>	<p>Alternative 4A (California WaterFix). This shows, based on a regression between white sturgeon year-class index and Delta outflow, that there would be expected to be very effect to sturgeon from the alternative 4A (see, for example, section 5.4.1.3.2.2.2.1 Delta Outflow in the working draft BA for the California WaterFix).</p> <p>For more information regarding modeling please see Appendix 5A of the FEIR/EIS.</p>
1723	360	<p>Commenting on a previous version of the Draft Plan, the California Department of Fish and Game stated:</p> <p>"River flows are important to sturgeon production in the Sacramento River system and Delta, and [proposed project] operations are predicted to result in significant occurrences of river flow reduction during the sturgeon spawning and early rearing periods. Reductions are most pronounced in the mainstem Sacramento River downstream of the Fremont Weir and the proposed northern delta intakes, but occurrences of substantial flow reductions are also predicted in more upstream river reaches.</p> <p>"... the [proposed project] is predicted to expose green sturgeon larvae to substantial reductions in July-September Feather River flows in most years.</p> <p>"The collective predicted negative river flow effects of the [proposed project] create the risk of a depressive effect on sturgeon production that may not be overcome by more favorable [proposed project] aspects (e.g. reduced entrainment, increased food production supply). This suggests the need to modify the [proposed project] to reduce the magnitude and frequency of river flow reduction occurrences, in both upstream and downstream areas."</p> <p>(CDFW Red Flags 2012 at 2.)</p> <p>The Bureau of Reclamation made an analogous observation in its comments on the same earlier draft of BDCP. USBR Red Flags 2012 at 4. These problems have not been resolved in the current Draft Plan or DEIS/DEIR.</p> <p>The negative effect of reduced flows is likely to extend to areas downstream of the north Delta diversion.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>While the document acknowledges that there may be reductions in flows in specific locations sometimes, the overall conclusions are the combination of multiple factors. Early life stage sturgeon effects were evaluated in coordination with NMFS biologists at Wilkins Slough, Verona, and Red Bluff in the Sacramento River and at Thermalito Afterbay and the confluence with the Sacramento River in the Feather River. In addition, an evaluation of Delta outflow was conducted because a correlation exists between sturgeon year class strength and Delta outflow. Please see Appendix 5C, Sections 5C.5.2.13.2.7 and 5C.5.3.13.2.8 for details. These locations span the range of sturgeon in the Central Valley upstream of the bays such that if there were any effects, they should be seen at these locations. Also, see Chapter 11 in the EIR/EIS for analyses on potential impacts to sturgeon both within and upstream of the Delta. These analyses concluded that impacts on sturgeon would be less than significant and not adverse.</p>
1723	361	<p>The best available science indicates that Delta outflows likely correlate positively with sturgeon rearing success in this estuary. Israel et al. 2009 (citing Kolhorst et al. 1991); U.S. Fish and Wildlife Service 1995 [Footnote 73: U.S. Fish and Wildlife Service, 1995. Working paper on restoration needs: habitat restoration actions to double natural production of anadromous fish in the Central Valley of California. Volume 3. May 9, 1995. Prepared for the U.S. Fish and Wildlife Service under the direction of the Anadromous Fish Restoration Program Core Group. Stockton, California.]; AFRP 2001 Final Plan; National Marine Fisheries</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Lead Agencies used the best available science throughout the effects analysis. The use of specific scientific data and findings was often vetted with fisheries managers to ensure it was the best available. A variety of data were obtained for the proposed project process: quantitative data from peer-reviewed published literature on topics specific to the Plan Area; peer-reviewed published literature outside the Plan Area but on topics relevant to the proposed project; unpublished quantitative data from within the Plan</p>

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		<p>Service 2010 Testimony to the State Water Resources Control Board, Exhibit 9; Fish Agencies 2012 "Scenario 5 Modeling." Consistent with this scientific information, California Department of Fish and Wildlife noted in 2012 that:</p> <p>"The EA [Effects Analysis] seems to suggest that a reduction in entrainment of juvenile sturgeon at the south Delta offsets (justifies) the effects of reduction in winter-spring outflows. While the statement that "Entrainment of juvenile sturgeon at the south Delta pumping facilities, however, is considered an important stressor for this life stage." may be true, it is not considered to be a more important stressor on sturgeon than reduced winter-spring outflow. Entrainment of juvenile white sturgeon at the south Delta pumping facilities is not a significant stressor, when compared to the loss of winter-spring outflow. Although entrainment of green sturgeon is a somewhat different matter, reducing it in exchange for reducing winter-spring outflow is still not preferred."</p> <p>(CDFW Red Flags 2012 at 1.)</p> <p>As noted elsewhere in our comments (see, e.g., discussion supra regarding longfin smelt and Delta outflows), operations under all Alternative 4 variants reduce Delta outflows, in some cases severely. Given that the best available science indicates that current levels of Delta outflow are inadequate to maintain or restore many native fish species in the Delta including sturgeon, see SWRCB 2010; CDFW 2010; DSP Outflows Review Panel Report 2014, the failure to increase winter-spring Delta outflows from present levels (let alone to decrease them) will perpetuate and likely exacerbate negative impacts to green and white sturgeon.</p>	<p>Area and from outside of the Plan Area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available.</p> <p>No specific concerns or questions on sections of the EIR/EIS are raised in this comment.</p>
1723	362	<p>As with other strong, well-documented relationships between flow and fish species' abundance, the Draft Plan attempts to cast doubt on the effect by pointing to a general lack of consensus regarding the mechanism underlying the effect. Yet this does not justify ignoring the best available science that clearly identifies strong relationships between freshwater flow rates and positive population-level responses among numerous aquatic species in this estuary; one does not need to understand the mechanism of an effect to be certain that a relationship exists and is likely to persist into the future. With regard to the Draft Plan's statement that: "... there is appreciable uncertainty in the mechanisms involved in Plan Area (and other) flows for migration and movement, which would be investigated during BDCP implementation monitoring and research," California Department of Fish and Wildlife previously commented that:</p> <p>"The assessment effects seems to turn the notion of uncertainty upside down. In general, the Plan reduces winter-spring outflow, and in some regards Sacramento River Flow. There is a strong historical association between flow conditions and sturgeon production, which the EA [Effects Analysis] seems to dismiss, citing a lack of understanding of the mechanisms underlying the association."</p> <p>(CDFW Red Flags 2012 at 1.)</p> <p>The best available science indicates with high certainty that green and white sturgeon spawning, larval and juvenile rearing and transport success is positively correlated with the rate of freshwater flows into, through, and out of the Delta. There is no justification for the Draft Plan or DEIS/DEIR to ignore the potential effect of reduced flows in the lower Sacramento River, Delta through-flow, and Delta outflow on these two species. Both the DEIS/DEIR and Draft Plan fail to use the best available science regarding the effects of flow reductions on green and white sturgeon. In particular, the DEIS/DEIR conclusions regarding</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>While the document acknowledges that there may be reductions in flows in specific locations sometimes, the overall conclusions are the combination of multiple factors. Early life stage sturgeon effects were evaluated in coordination with NMFS biologists at Wilkins Slough, Verona, and Red Bluff in the Sacramento River and at Thermalito Afterbay and the confluence with the Sacramento River in the Feather River. In addition, an evaluation of Delta outflow was conducted because a correlation exists between sturgeon year class strength and Delta outflow. Please see Appendix 5C, Sections 5C.5.2.13.2.7 and 5C.5.3.13.2.8 for details. These locations span the range of sturgeon in the Central Valley upstream of the bays such that if there were any effects, they should be seen at these locations. Also, see Chapter 11 in the EIR/EIS for analyses on potential impacts to sturgeon both within and upstream of the Delta. These analyses concluded that impacts on sturgeon would be less than significant and not adverse.</p>

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		effects on migration conditions for green sturgeon (AQUA-132), [Footnote 74: The DEIS/DEIR's conclusions regarding white sturgeon (AQUA-149 and AQUA-150) lack substantial evidence for the same reasons.] including the conclusion in AQUA-130 that Alternative 4 would not cause adverse impacts on migration conditions and that there are not feasible mitigation measures to reduce impacts under other alternatives are both incorrect; the former ignores the weight of scientific evidence, and the latter ignores changes to operational rules that reduce impacts on Delta inflows, bypass flows, and outflows.	
1723	363	<p>Predation Risk:</p> <p>The DRERIP (Delta Regional Ecosystem Restoration Implementation Plan) life history conceptual models for the sturgeon species both indicate that predation may be a concern to the youngest/smallest life stages, when they are in the riverine environment. Israel and Klimley 2008 at 32; Israel et al. 2009 at 36. Reduced turbidity below the north Delta intakes would exacerbate this problem as increased water clarity increases predator efficiency on sturgeon. Gadomski and Parsley 2005a,b,c. The Draft Plan inappropriately assumes that predation rates are not important to either white or green sturgeon larvae or juveniles in the Plan Area (though it is not clear why the location of these life stages in the Plan Area would reduce their susceptibility to predation); nevertheless, it assumes that the BDCP could produce a beneficial reduction in predation throughout the Plan Area. Draft Plan at 5.5.8-14. In fact, the Draft Plan and DEIS/DEIR analytical outputs indicate a substantial risk of increased predation on early life stages of both sturgeon species; this increased risk arises from both the reduced flows (discussed above), reduced turbidity, the interaction between the two, and the increased density of predators expected to aggregate close to the CM1 facility, see Draft Plan at 5.5.8-14. The US Bureau of Reclamation, commenting on an earlier version of the Draft Plan, specifically requested a more thorough evaluation of the claim that predation of green sturgeon would be a minor effect. USBR Red Flags 2012 at 5. The DEIS/DEIR and Draft Plan do not do so, as we discuss below.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The BDCP acknowledges that predation occurs on green and white sturgeon, but there is uncertainty regarding its importance to the two species (see Appendix 5F, Biological Stressors, Section 5.F.5.1.3.4). Regardless, a full discussion of benefits and risks to predation resulting from the BDCP can be found in Section 5.F.5.3.5. In the BDCP Chapter 5 Effects Analysis, Section 5.5.8, Green Sturgeon (Southern DPS) and White Sturgeon, discuss that overall, there would be a minor reduction in predation of green and white sturgeon, although there is low certainty and predation is not thought to be a major stressors to either species.</p> <p>For more information on potential impacts to green and white sturgeon under the new proposed project (Alternative 4A), please see Chapter 11 in the FEIR/EIS.</p>
1723	364	<p>Reduced Turbidity and Predation Risk:</p> <p>Projected diversion of sediment and other suspended particles from the Sacramento River at the north Delta diversion facility are expected to increase water clarity and reduce turbidity throughout the Delta on average. DEIS/DEIR at 11-267. The effect is actually larger than the DEIS/DEIR acknowledges as operations under ESO_LLT (evaluated starting operations-late long term) are expected to remove well over 20% of the Sacramento River's sediment load in most months April-October. Draft Plan Appendix 5.C, Attachment 5C.D at 5C.D-24 (Figure 5.C.D-11). This is the period when this stretch of river would normally be occupied by larval and juvenile white and green sturgeon. Thus, the reduced turbidity expected under the BDCP in the primary migration corridor for white and green sturgeon juveniles will likely lead to increased predation on young-of-the-year white and green sturgeon, and this adverse impact is inappropriately dismissed in the Draft Plan (see Draft Plan at 5.5.8-32) and is not considered or analyzed at all in the DEIS/DEIR.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Turbidity conditions have been re-evaluated and a revised analysis is presented in the Final EIR/EIS. Turbidity discussion for all species is updated accordingly. Also, the revised Preferred Alternative includes an environmental commitment to reintroduce sediment diverted at the North Delta intakes to the Delta, at locations and in a manner to be approved by the fish and wildlife agencies as beneficial to Delta and longfin smelt habitat.</p>
1723	365	<p>Predation Risk: Combined Effects:</p> <p>Reduced flows and reduced turbidity below the new north Delta diversion facility (CM1) each represent separate independent threats to white and green sturgeon that the DEIS/DEIR improperly discount or ignore, and the combination of these two effects is expected to exacerbate the increased predation rates that might arise from either of the</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Turbidity conditions have been re-evaluated and a revised analysis is presented in the Final BDCP and EIR/EIS. Turbidity discussion for all species is updated accordingly. Also, the revised Preferred Alternative includes an environmental commitment to reintroduce sediment diverted at the North Delta intakes to the</p>

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		individual impacts. When river flow rates fall substantially, as they will below the new North Delta diversion, the reduction in volume concentrates predators and prey into a smaller area. In addition, the decline in river volume will also cause a drop in river depth (stage) that will allow sunlight to penetrate through more of the water column, to depths that represent prime sturgeon habitat in many places.	Delta, at locations and in a manner to be approved by the fish and wildlife agencies as beneficial to Delta and longfin smelt habitat. The effects of reduced flows has also been evaluated in Chapter 11, FEIR/EIS.
1723	366	Diversions at the north Delta facility would be expected to reduce the Sacramento River's velocity and, therefore, its competence to transport suspended sediments that have not been diverted. Thus, diversion of water and suspended sediment by CM1 will increase water clarity, increase light levels in near-bottom environments frequented by both sturgeon, and concentrate predators in a smaller area -- it is highly likely that this will increase predation rates on both green and white sturgeon juveniles and larvae; this is likely to represent a severe impact on both species. See, e.g., Gadomski and Parsley 2005 a,b,c.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The BDCP acknowledges that predation occurs on green and white sturgeon, but there is uncertainty regarding its importance to the two species (see Appendix 5F, Biological Stressors, Section 5.F.5.1.3.4). Regardless, a full discussion of benefits and risks to predation resulting from the BDCP can be found in Section 5.F.5.3.5. In the BDCP Chapter 5 Effects Analysis, Section 5.5.8, Green Sturgeon (Southern DPS) and White Sturgeon, discuss that overall, there would be a minor reduction in predation of green and white sturgeon, although there is low certainty and predation is not thought to be a major stressors to either species. In addition, a new suspended sediment analysis has been conducted and is in the FEIR/FEIS.
1723	367	The proportional and absolute reduction in fresh water flows and turbidity downstream of the north Delta diversion are expected to be greatest during Wet and Above Normal type water years, the very years in which the most white and green sturgeon young-of-year would be exposed to predation risks. In addition, we note that this combined impact would apply to all species that use the Sacramento River as a primary migration corridor (e.g. all the covered salmonid species).	Please see response to comment 1723-366 regarding green and white sturgeon. No specific questions or concerns are raised about sections of the EIR/EIS.
1723	368	Entrainment/Impingement and Indirect Effects (Predation) at North Delta Diversions: The Draft Plan and DEIS/DEIR fail to adequately analyze the potential effect of a range of entrainment and impingement rates at the new North Delta diversion on green and white sturgeon larval-juvenile survival rates. Entrainment at existing agricultural diversions like that of the Glenn-Colusa Irrigation District is believed to be a stressor of high importance for green sturgeon feeding larvae. Israel and Klimley 2008. White sturgeon spawn downstream of the GCID diversion, so this stressor is not regarded as high currently, Israel et al. 2009, but the addition of a new diversion facility in the heart of this species' juvenile rearing grounds is cause for concern. Entrainment rates of juvenile green and white sturgeon at the new North Delta Diversion are unknown; however, the Draft Plan's unsubstantiated dismissal of this potential effect is unsupported by science.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. As the commenter states, entrainment of early life stages at GCID is classified as being of high importance by Israel and Klimley (2008), although the understanding is classified as low by the same authors, and the overall impact on the population is unknown. Regardless, as stated in section 5.5.8.1.6 Reduced Entrainment, only juvenile green sturgeon would be exposed to the NDD, and would be large enough to be screened. Note that the importance of entrainment to green sturgeon in the Delta is characterized as low by Israel and Klimley (2008), consistent with the draft BDCP effects analysis. For white sturgeon, Israel et al. (2009) suggested entrainment of early life stages is of low or no/minimal importance, with low understanding. As described in the public draft BDCP section 5.5.8.1.6 Reduced Entrainment, there is uncertainty regarding the potential for effect from the NDD on sturgeon and other covered fishes, which would be monitored. Chapter 11 of the EIR/EIS addresses the effects of entrainment on both green and white sturgeon.
1723	369	The bypass flow conditions for the new screens (which are unprecedented in the length of river they will cover) were designed to protect migrating Chinook salmon juveniles and delta smelt. These fish live in the middle and/or upper part of the water column, unlike sturgeon, which are bottom-dwellers. As indicated by green sturgeon's much greater susceptibility to entrainment in unscreened small agricultural diversions, see Mussen et al. 2014, sturgeon behavior and ability to avoid entrainment and impingement at the CM1 screens are unknown and not analogous to those of salmonid species. Furthermore, as predators are likely to aggregate near the new diversion facility, see Draft Plan at 5.5.8-14, the DEIS/DEIR and Draft Plan fail to adequately analyze the effects of increased predation, which is likely to be as much or higher than that affecting salmonids as described above. See Draft Plan, Appendix 5.F, Section 5.F.6.3.1.4). The Draft Plan and DEIS/DEIR fail to adequately analyze	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Effects on green sturgeon juveniles from the North Delta Diversion screens were discussed in 5.5.8.1.6 of the public draft BDCP. With respect to predation, NMFS (2009 SWP/CVP biological opinion: 350) suggested that predation on juvenile green sturgeon during occurrence in Clifton Court Forebay would be minimal, given their size and protective scutes, but noted that this has never been experimentally verified. If true, the potential for predation at the NDD would also be expected to be minimal because the size and protective scutes of green sturgeon occurring near the NDD and the predators would be similar to that found in Clifton Court Forebay. However, it is acknowledged that there remains uncertainty in the potential and extent of predation of juvenile green sturgeon at the NDD. It is unclear why the commenter suggests that predation effects are likely to be as much or higher than that affecting salmonids; there is no Section 5.F.6.3.1.4 in

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		these impacts, and both documents need to be revised to analyze the effect of greater entrainment, impingement, and predation as a result of the operation of CM1, consistent with the scientific information provided above.	Appendix 5.F of the public draft BDCP. Chapter 11 of the Final EIR/EIS addresses the effects of entrainment on both green and white sturgeon.
1723	370	Entrainment at South Delta Diversions: The DEIS/DEIR overstates the likelihood of positive impacts from reduced entrainment of sturgeon at the south Delta export facilities. Confidence intervals on estimated entrainment at south Delta diversion suggest there are may be no differences among modeled alternatives, particularly for wet years. Draft Plan Appendix 5B at 5.B-270 (Table 5.B.6-206). Thus, reported proportional declines in sturgeon entrainment DEIR/DEIS are misleading, as they represent actual differences amounting to just a few fish and there is little confidence that these effects are real, given error bounds around the estimates. NMFS identifies entrainment as a problem for this species; thus, if there is no real change in entrainment rates under modeled alternatives, then entrainment may continue at unacceptably high rates. It is possible that entrainment at the south Delta facilities will decline in dry years at the CVP, but again the differences are not as great as the raw percentages might suggest.	Overall, it is expected that entrainment would be lower under the proposed project, Alternative 4A (California WaterFix), because of less south Delta exports. There is uncertainty in the extent of the differences. Regarding the issue of entrainment of green sturgeon under existing conditions, NMFS' 2009 biological opinion provided a number of measures, currently being implemented, to avoid jeopardy to green sturgeon and other listed species. The inclusion of these measures in California WaterFix, plus the potential for less entrainment because of less south Delta exports, would intend to continue to avoid the potential for jeopardy to the species. For more information regarding impacts on sturgeon see Chapter 11 of the Final EIR/EIS.
1723	371	Temperature and Flow -- Upstream Effects: Both the Draft Plan and DEIS/DEIR suggest that temperature and flow impacts to green sturgeon may occur upstream, particularly on the Feather River. We have indicated our concern with elevated temperatures and reduced flows in our discussion of potential impacts of the BDCP to salmonid populations, and there are similar concerns with regard to the potential impacts to green and white sturgeon. In particular, the DEIS/DEIR indicates that temperatures will exceed the 64 degrees F threshold at Gridley (on the Feather River) with much greater frequency during the July-September period and that this negative effect will be most common in the Above Normal and Wet years when rearing sturgeon larvae and juveniles are expected to be most abundant. DEIS/DEIR at 11-1576. Similarly, exceedances of the temperature threshold identified for rearing green sturgeon larvae and juveniles would increase under Alternative 4/H3 on the Sacramento River at Bend Bridge in July-September. DEIS/DEIR at 11-1578 (Table 11-4-104). This table contradicts the DEIS/DEIR claim that there would be no difference in mean monthly temperatures at Bend Bridge in any month or water year type and therefore no impact to green sturgeon rearing habitat. DEIS/DEIR at 11-1588.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. As indicated in the text, the goal of changing operations in the Feather River was to shift to a more natural and historical hydrograph of higher spring flows and lower summer flows. In addition, all applicable regulatory standards for the Feather River in the NMFS BiOp would be met under BDCP/CWF operations at the same frequency as are currently being met. The values in Table 11-4-100 and Table 11-4-104 were incorrect in the Draft EIR/S but were changed for the final EIR/S and are now consistent with the BDCP document. The conclusions that there were no impacts to green sturgeon spawning and egg incubation habitat are now consistent.
1723	372	The temperature appendix reveals that temperatures during the green sturgeon rearing period are expected to increase compared to those currently experienced. DEIS/DEIR, Appendix 11D at 11D-268 to -269 (Table 2). In other words, there will be a significant impact of elevated temperatures in the Sacramento River to rearing green sturgeon juveniles. The DEIS/DEIR inappropriately dismisses these temperature exceedances and ignores scientific evidence indicating this is a stressor of "medium" importance and certainty to green sturgeon. See Israel and Klimley 2008; NMFS 2009 Biological Opinion at 712.	The tables cited in the comment reveal that there are no differences between NAA vs. H3, H3 vs. H1, and H3 vs H4. This indicates that there are no effects, as stated. The comparison of Existing Conditions vs. H3 is confounded by other factors such as climate change, as described in the last section of Impact AQUA- 131 of the DEIS/DEIR, Therefore, this comparison does not isolate the effects of the project, as does the comparison with the NAA baseline.
1723	373	In discussing the impacts of temperature changes driven by proposed BDCP operations, the DEIS/DEIR fails to look at cumulative impacts and implies that perceived positive effects to green sturgeon eggs and early larvae will offset the negative effects to later life stages of the same fish; it states: "Water temperature-related effects of H3 on green sturgeon rearing habitat in the Feather River were also evaluated by determining the total degree-months exceeding the 64	The values presented in the text are incorrect and do not match the values in the table. This has been corrected for the Final EIR/S. Regardless, the DEIS/DEIR does not indicate that negative effects are offset by positive effects. In this case, the negative effects are not expected to rise to a level at which they would be considered adverse.

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		<p>degrees F temperature threshold at Gridley (Table 11-4-102). Combining water years, total degree-months exceeding the threshold under H3 would be 8% to 31% lower relative to NAA (No Action Alternative) during May and June and 13% to 126% higher during July through September. These results indicate that there would be both beneficial and negative temperature-related effects to green sturgeon rearing in the Feather River."</p> <p>(DEIS/DEIR at 11-1587.)</p>	
1723	374	<p>Increasing survival of green sturgeon eggs (as the DEIS/DEIR asserts will occur), cannot be reported as a positive effect if, as the analysis reveals, high temperatures will impair or kill the resulting larval and juvenile life stages of these fish. Thus, the DEIS/DEIR's statement that Alternative 4 operations will not impact juvenile rearing habitat for green sturgeon is without scientific support. DEIS/DEIR at 11-1586. As a result, the DEIS/DEIR's conclusions regarding effects on rearing habitat for green sturgeon (AQUA-131) and white sturgeon (AQUA-149) lack substantial evidence and are contrary to the best available science.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The effects analysis in Chapter 11, Fish and Aquatic Species, of the Final EIR/EIS demonstrates that there would be no temperature-related effects of Alternative 4A on sturgeon. The modeling results indicate that the effect would not be adverse because it does not have the potential to substantially reduce the amount of suitable habitat. Water temperatures in the Sacramento and Feather Rivers and exceedances of NMFS temperature thresholds in the Feather River under Alternative 4A would be similar to those under NAA_ELT. Although degree-months would be higher on a relative scale under Alternative 4A during some months, these changes would not be biologically meaningful when considering the high variation in water temperatures relative to these increases. These modeling results would generally be consistent among scenarios.</p>
1723	375	<p>Fall-run Chinook salmon and late fall-run Chinook salmon merit conservation as independent and distinctive lineages. Smith et al. 1995; Moyle 2002. Thus, regardless of the population designation, it is clear that at a minimum, late fall-run warrant conservation efforts that maintain their distinctiveness from other Central Valley fall-run Chinook as an important life history variant. See also NMFS 2009 Biological Opinion at 181 (showing differences in life history timing between the different runs in the Central Valley). In particular, late fall-run Chinook salmon are mostly "stream-type" Chinook salmon as opposed to fall-run Chinook salmon which are typically "ocean-type" Chinook salmon. Moyle 2002. This is a basal life-history distinction within Chinook salmon, Healy 1991, which indicates, among other differences, that late fall-run Chinook salmon juveniles tend to rear in freshwater for many months (up to one year) whereas fall-run Chinook salmon migrate to the ocean quickly, usually in less than half a year. Moyle 2002 at 255. Thus, when late fall-run Chinook salmon reach the Delta, they generally follow a "migrant" strategy (meaning they do not rear much or for long in the Delta) and fall-run Chinook salmon juveniles are much more likely to forage or rear in the Delta.</p> <p>The difference in these two strategies has implications for the distribution of positive and negative effects among late fall-run and fall-run juveniles. For example, late fall-run juveniles are unlikely to benefit much from efforts to improve prey productivity in the Delta. Williams 2010. In contrast, fall-run Chinook juveniles are among the salmonids most likely to benefit from improved rearing conditions in the Delta because they actually tend to rear in downstream environments. On the other hand, fall-run Chinook salmon juveniles migrate to the Delta at smaller sizes than late fall-run juveniles and they are thus more likely to suffer from increased predation pressure and altered delta hydrodynamics that would lead to entrainment or other sources of mortality following diversion from an optimal migratory path. Clearly, the different adult migration timing of these fish exposes them to different flow rates and temperatures during their adult migration, spawning, and egg incubation phases -- juveniles also migrate at different times with late fall-run arriving in the Delta in the late fall-winter while fall-run Chinook salmon juveniles enter the Delta primarily</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Regarding fall-run and late fall-run Chinook salmon, the commenter states that the DEIR/EIS "interpret(s) different results for the two runs as though they were the same result" but does not offer a specific example of where they believe this to occur. The analysis in Chapter 11 of the EIR/EIS does separately analyze the two runs and a discussion of those differences is included in the NEPA and CEQA determination discussions but the final determinations are based on the fall-/late fall-run ESU.</p>

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		<p>between March and June. Moyle 2002; Williams 2006.</p> <p>The Draft Plan appropriately sets different through-Delta survival objectives for fall-run and late fall-run Chinook salmon. However, two other objectives regarding the maintenance of spawning and rearing conditions upstream of the new water facilities (FRCS3.1 and FRCS3.2, see Draft Plan at 3.3-162), treat the late fall-run and fall-run Chinook salmon life history variants cumulatively. In keeping with the genetic and eco-phenotypic differences between these two runs, the Draft Plan appropriately provides separate analyses of effects for late-fall and fall-run Chinook salmon. However, despite the separate analyses, the Draft Plan and DEIS/DEIR tend to interpret different results for the two runs as though they were the same result. More importantly, we see no indication that the Draft Plan will accomplish the objective of benefiting both life history types equally. As with most other objectives, the DEIS/DEIR does not compare projected outcomes to those described by the conservation strategy objectives.</p>	
1723	376	<p>Upstream Adult Migration:</p> <p>The Draft Plan finds that olfactory cues for migrating adult salmon will be changed differentially for fall-run and late-fall run Chinook salmon. Specifically, the strength of olfactory cues to migrate towards the Sacramento River (i.e., the proportion of water in key Delta channels that emanates from the Sacramento River) declines under ESO (evaluated starting operations) by 10% for fall-run Chinook salmon and 50% for late-fall run Chinook salmon. Draft Plan at 5.5.5-25. Given these reductions, the Draft Plan concludes with low certainty that there will be a low magnitude negative impact for both fall-run and late-fall run adult migrants trying to orient towards the Sacramento River. The Draft Plan provides no rationale as to why both runs would experience low magnitude and low certainty negative effects given the vast difference in proportional impact to flows experienced by the two runs; it seems that the late-fall run should experience a greater impact, with greater certainty, than for fall-run given the larger projected decline (50%) in the indicator of olfactory cues for late-fall run Chinook salmon. In fact, the DEIS/DEIR implies a threshold for effect on adult salmon migration of proportional declines in flow that are 10%, but, contrary to the Draft Plan, it finds that the proportion of Sacramento River flow in the Delta will only be 10%. DEIS/DEIR at 1458. The difference between Draft Plan and DEIS/DEIR predictions of Sacramento River proportional flow reduction must be resolved in order to allow evaluation of impacts on late-fall run Chinook salmon adult migrants.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The reason fall- and late fall-run Chinook salmon are combined in conclusions is that NMFS treats the two races as one ESU.</p> <p>Because the BDCP/Alternative 4 is no longer being considered as the preferred alternative, the EIR/EIS document should be considered the prevailing finding for this alternative over the Draft BDCP document.</p>
1723	377	<p>Spawning, Incubation, and Rearing (Upstream):</p> <p>The Draft Plan and DEIS/DEIR understate and downplay negative impacts to fall and late-fall run Chinook salmon upstream of the Delta that are related to project operations under Alternative 4. The DEIS/DEIR reports an increase in years with adequate available spawning area for fall-run Chinook salmon on the Sacramento River under Alternative 4, but also report an increased frequency of years where dewatering of redds will be a problem for Chinook salmon (particularly in November). DEIS/DEIR Appendix 11c at 11C-225. Dewatering of fall-run Chinook eggs is already a problem for Sacramento River fall-run, e.g., SRTTG 2013, and, it is important to note that flow levels in this spawning area that cause redd dewatering are almost completely under the control of the CVP at this time of year. The DEIS/DEIR estimate a 7% increase in years when redd dewatering will be problematic; this is a significant impact, regardless of the perceived increase in frequency of "good" availability of spawning habitats--fish that spawn in habitats that will eventually be dewatered obviously</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723- 332 regarding the method of determination when there are multiple tributaries, months, water year types, and scenarios to include in a determination. The analysis reports all these findings both in text and in tables.</p>

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		do not benefit from any increase in spawning habitat availability.	
1723	378	In addition, the projected increase in available spawning habitat ignores the anticipated increase in water temperature downstream of Keswick Dam during September and October in almost every year type under Alternative 4/H3 as compared to the NAA (No Action Alternative). See, e.g., DEIS/DEIR at 11D-257. Though small in relative terms, these projected increases in temperature would be expected to negatively affect available fall-run spawning habitat and egg incubation success.	Real-time operations are primarily designed to ensure that water temperature criteria downstream of Keswick Dam are not exceeded.
1723	379	Temperatures are already at or near threshold for Sacramento River fall-run Chinook salmon in many years and, judging from the comparison of temperatures under existing conditions and those under Alternative 4/H3, temperatures problems will increase in the future; thus, even small (proportional) increases in temperature under H3 relative to NAA (No Action Alternative) likely represent large impacts to incubating fall-run Chinook salmon eggs. In fact, the DEIS/DEIR reports increases in egg mortality of 5% or more in most years under Alternative 4/H3 relative to the NAA. The magnitude and frequency of egg mortality increases for fall-run Chinook salmon eggs is of great concern. The DEIS/DEIR reports that "Total degree-days exceeding 56 degrees F ... under H4 would be 10% higher than those under NAA during March and similar during remaining months (Table 11-4-68)." DEIS/DEIR at 11-1412. Temperature exceedances during March are likely to result in extra mortality to fall-run Chinook salmon eggs and juveniles rearing on the upper Sacramento River, an impact to run productivity; in addition, the asymmetrical impact to those fall-run Chinook salmon that incubate towards the end of this run's incubation period represents a negative impact to fall-run Chinook salmon life history diversity.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Impact AQUA-76: Effects of Water Operations on Spawning and Egg Incubation Habitat for Chinook Salmon (Fall-/Late Fall-Run ESU) in Chapter 11 of the Final EIR/EIS. The Reclamation egg mortality model predicts that fall-run Chinook salmon egg mortality in the Sacramento River under H3_ELT would be similar to mortality under NAA_ELT in all water year types except below normal years, for which mortality under H3_ELT would be 11% higher (Table 11-4A-52). However, the corresponding absolute increase would be 2% of the fall-run population, which is not substantial. Therefore, these results indicate that H3_ELT would have negligible effects on fall-run Chinook salmon egg mortality.</p>
1723	380	SacEFT projects a 5% decrease in years when juvenile rearing conditions will be considered "good" for fall-run juveniles on the Sacramento River upstream under Alternative 4/H3 operations. DEIS/DEIR at 11-1393 (Table 11-4-56). The net impact of increasingly frequent occurrence of years that are "not good" for fall-run Chinook salmon redds or rearing juveniles cannot be good for fall-run Chinook salmon; but, the magnitude of the impact depends largely on how "bad" conditions become and whether bad conditions for redds overlap years with bad conditions for juveniles.	The Lead Agencies generally agree with this statement.
1723	381	Temperatures exceeding fall-run Chinook egg tolerances are expected to increase in some year types, during either October or November, under Alternative 4/H3 on the Feather River. DEIS/DEIR at 11-1397 (Table 11-4-61). Increased temperature exceedances are also expected during September in most years under H1. DEIS/DEIR at 11-1354 (Table 11-4-41). Furthermore, comparison to current conditions indicate that temperatures on the Feather River will exceed egg incubation thresholds much more frequently in the future than under current conditions; this indicates that the BDCP will not be implemented in a way that would mitigate for expected temperature effects related to climate change. As a result, Feather River fall-run Chinook salmon spawning will be substantially impacted in a future with BDCP.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The analysis did not assume climate change adaptation because it would have been speculative to make such assumptions when so little is known about what adaptations could be made.</p>
1723	382	The frequency of years with "good" rearing habitat conditions for late-fall run Chinook salmon in the upper Sacramento River are projected to decline by 33% in Alternative 4/H3 as compared to the No Action Alternative. DEIS/DEIR Table 11-4-58 at 11-1394. Furthermore, the frequency of years with increased risk of juvenile stranding would increase by 9% between the two scenarios. Finally, the projected 10% increase in temperature exceedances in late-fall run Chinook salmon incubation habitat on the upper Sacramento River during March (referenced above) will likely lead to increased egg mortality for this run	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The Lead Agencies agree that this is what the analysis and text indicate. However, caution must be applied when making proportional/relative comparisons with small numbers. These proportional differences become inflated, which is why absolute (raw) results are reported with relative results.</p>

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		under Alternative 4/H4.	
1723	383	The DEIS/DEIR finds that "collectively" there will be no adverse impact of the BDCP to egg incubation conditions for fall-run Chinook salmon on the Sacramento River. DEIS/DEIR at 11-1415. This finding is not supported by the DEIS/DEIR analyses which reveal negative impacts to abundance, productivity, and life history diversity of fall-run Chinook salmon resulting from increased occurrence of high temperatures and red dewatering.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Comment 332 regarding the method of determination when there are multiple tributaries, months, water year types, and scenarios to include in a determination. The analysis reports all these findings both in text and in tables. The Lead Agencies disagree that the findings to not support the determination.
1723	384	<p>The DEIS/DEIR concludes that Alternative 4 operations will not result in significant impacts to juvenile rearing conditions for fall or late-fall run Chinook salmon upstream on the Sacramento River; however, its rationale is confused, as it states:</p> <p>"Changes in flow rates and water temperatures are generally small and infrequent under Alternative 4 relative to the NAA [No Action Alternative]. Therefore, there would be no biologically meaningful effects to fall- or late fall-run Chinook salmon, except for a moderate reduction in juvenile rearing habitat for late fall-run Chinook salmon as predicted by SacEFT. Because this effect is isolated, it would not cause the impact to be adverse, particularly in combination with modeled flow outputs indicating that flows, which drive rearing habitat availability, would increase during the rearing period."</p> <p>(DEIS/DEIR at 11-1435 (emphasis added).)</p> <p>This statement is inaccurate and the DEIS/DEIR fails to demonstrate how the reduction in surviving juveniles as a result of increased redd dewatering is somehow outweighed by improved conditions later in the year (obviously, eggs in dewatered redds will die rapidly and they will not be resurrected by subsequent flows). In addition, the DEIS/DEIR points to increased frequency of other relatively severe outcomes, such as egg incubation temperature exceedances, and large increases in the frequency of sub-optimal rearing conditions for fall-run and particularly for late-fall run Chinook salmon.</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Comment 332 regarding the method of determination when there are multiple tributaries, months, water year types, and scenarios to include in a determination. The analysis reports all these findings both in text and in tables. The Lead Agencies disagree that the findings to not support the determination.
1723	385	The DEIS/DEIR's projections of degraded upstream egg incubation, rearing and juvenile rearing conditions represents a significant impact to fall-run and late-fall run Chinook salmon. Impacts of Alternative 4 to late-fall run Chinook salmon are severe in the only remaining river that supports this life history; declines in the abundance and productivity of this run represent a significant loss to valuable life history diversity for the Central Valley fall-run ESU (Evolutionarily Significant Unit) overall. Furthermore, the DEIS/DEIR demonstrate large negative impacts to fall-run Chinook salmon incubation and juvenile rearing in the Sacramento River drainage. The available scientific information demonstrates that Alternative 4 will cause negative impacts upstream to the fall-run/late-fall run Chinook salmon ESU.	Please see response to comment 1723-384 regarding Chinook salmon.
1723	386	<p>North Delta Diversion Survival:</p> <p>The Draft Plan and DEIS/DEIR simply assume that screens on the new north Delta diversion will function perfectly and consistently throughout the life of the BDCP. The Draft Plan's Effects Analysis asserts that there is a "moderate" level of certainty that the effect will be "low." Draft Plan at 5.5.4-23. But this is contradicted by the Draft Plan's Appendix 5B, which declares that it was not possible to be certain about the level of impact these screens will have on either Chinook salmon or steelhead. Draft Plan, Appendix 5B at 5B-304. The DEIS/DEIR should have considered what would happen if the assumption of negligible entrainment was incorrect, even periodically (i.e. what if damage to, imperfect</p>	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For a discussion of uncertainty regarding the efficiency of screens at the proposed north Delta intakes, please see California WaterFix Biological Assessment, Section 5.4.1.3.1.1.1, North Delta Exports.

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		maintenance, or malfunction of the screens occurs with "x" frequency and results in "y" entrainment rate for a duration of "z" weeks?).	
1723	387	<p>The DEIR/DEIS ignores analyses that show negative impacts of additional predation at the north Delta diversion facility. In addition to the bioenergetics model results presented in the DEIS/DEIR, the Draft Plan (Appendix 5F) also applies a fixed predation model, based on observed entrainment rates at the Glenn-Colusa Irrigation District diversion screens. These screens are somewhat similar to those proposed for the NDD. The two estimates of potential predation at the new facility provide strikingly different predictions of predation on Chinook salmon; the bioenergetics model indicates predation rates at the NDD will be <1% for all Chinook populations, whereas the fixed predation model estimates ~12-13% loss of juvenile migrants at the NDD for each population of Chinook salmon. Both models cannot be correct and the Draft Plan and DEIS simply ignore the result showing significant predation at the north Delta diversion. See, e.g., Draft Plan Appendix 5F at 5.F-77. In reporting only the results that are more favorable to the BDCP, the Draft Plan and DEIS/DEIR miss the opportunity to learn from the different outputs of the two models and fail to inform decision makers and the public of the potential that these impacts may be more significant than reported in the documents. As the Delta Independent Science Review Panel noted, the high mortality of Chinook salmon at the GCID screening facility indicates that predators may aggregate near that structure, suggesting this risk exists for the NDD. DSP Independent Science Review Panel Report 2014 at 52. Thus, the difference between the two modeling approaches applied by the Draft Plan's appendix could reveal that the range of predator densities at the GCID facility or their metabolism is greater than those that were input to the bioenergetics model. The bioenergetics model methodology used to calculate potential predation rates arising from the presence of the North Delta diversion apparently would not predict existing mortality rates at the GCID screening facility; thus, a larger range of predator densities should have been modeled. Instead, the DEIS/DEIR and Draft Plan simply assume that the high predation predicted by the fixed predation model was completely wrong (despite the fact that it's based on a relevant, recent, local observation). This assumption is not scientifically justified.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The RDEIR/SEIS recognizes the potential for adverse effects from the NDD under Alternative 4A and as a result includes environmental commitments intended to offset the negative effects (e.g., Environmental Commitment 16 Nonphysical Fish Barriers), as well as real-time adjustments to operations to minimize potential negative effects. As described in the adaptive management and monitoring program in Section 4.1, as part of the final NDD screen design effort, several pre-construction studies would be implemented to better understand how to minimize losses associated with the three new intake structures. As noted in the RDEIR/SEIR, Alternative 4A also includes investigations to better understand factors affecting juvenile through-Delta migration (as described in the adaptive management and monitoring program in Section 4.1) and includes biologically-based triggers to inform real-time operations of the NDD, intended to provide adequate migration conditions for juvenile salmonids.</p>
1723	388	<p>Through-Delta Survival of Late Fall-Run:</p> <p>The Effects Analysis provides no compelling evidence that late-fall run Chinook salmon through-Delta survival success will improve under ESO (evaluated starting operations) conditions as compared to the environmental baseline (with equivalent assumptions regarding climate change). For example, the Delta Passage Model (DPM; which may actually be applicable to late-fall run Chinook salmon, though it is not appropriate for modeling other runs) finds very small differences in the early or late long-term between Alternative 4/H3 operations and current operations. Draft Plan at 5C.5.3-98 (Table 5C.5.3-49); DEIS/DEIR at 11-1458 (Table 11-4-76).</p> <p>The DPM results are likely to underestimate negative effects of BDCP on through-Delta survival of late-fall run Chinook migrants because of reduced flows, decreased turbidity, and the potential for increased predator exposure. The reductions in flow and other changes below the new intakes are likely very different from the conditions that were used to generate DPM. Operation of CM1 will lead to significant reductions in flow rates downstream of the facility and will cause an increase in water clarity (due to diversion of sediment and loss of river velocity needed to support sediments that remain) and increase in the river's width-to-depth ratio (WDR (Waste Discharge Requirement); i.e., a drop in river stage). Flow rates and turbidity are strongly and positively correlated with late-fall run</p>	<p>The Delta Passage Model was deemed the best available scientific tool for this analysis. Limitations of this method are disclosed.</p> <p>To the extent that proposed operations (and extensive restoration under the action alternatives) change Delta hydrodynamics, these have been captured in the modeling; tools to simulate turbidity over the appropriate time scales to inform models such as DPM are not available. It is acknowledged that the DPM does not inform the potential effects of extensive habitat restoration for fish entering such areas; this was analyzed with different tools such as habitat suitability analyses in the public draft BDCP.</p> <p>Turbidity conditions have been re-evaluated and a revised analysis is presented in the Final EIR/EIS. Turbidity discussion for all species is updated accordingly. Also, the revised Preferred Alternative includes an environmental commitment to reintroduce sediment diverted at the North Delta intakes to the Delta, at locations and in a manner to be approved by the fish and wildlife agencies as beneficial to Delta and longfin smelt habitat.</p>

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		Chinook salmon survival through the Delta and WDR is strongly and negatively correlated with late-fall run survival. Michel 2010; Michel et al. 2012; see Perry et al. 2010. Thus, the changes anticipated under operation of CM1 are beyond the range used to create the relationships in the DPM model and all strongly indicate that late-fall run Chinook salmon are likely to suffer significant impacts in the lower Sacramento River. Furthermore, even the relative success of late-fall run migrants through different Delta channels is likely to change under CM1 operations as predator distribution and success rate may change as flows, turbidity, and depth in the mainstem Sacramento River drop, following operation of the new north Delta diversion.	
1723	389	As the Draft Plan notes, DPM (Delta Passage Model) does not account for "growth benefits related to floodplain and tidal wetland restoration," Draft Plan Appendix 5C at 5.C.5.3-65, but even if marsh restoration is successful, (a) late-fall run Chinook salmon juveniles generally follow a migrant strategy, see Michel 2010; Williams 2006; Williams 2010, and are thus not likely to use or benefit from those habitats, and (b) salmon rearing in tidal marsh habitats should be expected to experience additional mortality in the Delta (though potentially better post-Delta survival) because predation exposure will increase as time in the Delta increases and as foraging behavior increases. Helfman et al. 1997 [Footnote 75: The Draft Plan and DEIS/DEIR ignore the likely positive relationship between increased in-Delta rearing time and total in-Delta mortality in their discussion of all salmonids.]. Furthermore, DPM does not account for increased in-Delta mortality to migrating late-fall Chinook salmon that is likely to result from decreased turbidity under the BDCP (e.g. as a result of CM1 operation, sediment loss in restoring wetlands, CM4, etc.). Thus, DPM outputs are expected to overstate survival of late-fall run Chinook salmon through the Delta. In addition, the analysis provides no basis for concluding that the Draft Plan is likely to achieve the applicable through Delta survival objective and instead demonstrates that the Draft Plan is unlikely to achieve that biological objective for this species.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Please see response to comment 1723-388 regarding the DPM.
1723	390	Through-Delta Survival of Fall-Run: It is well established that fall-run Chinook salmon experience greater survival through the Delta when river flows increase. Kjelson and Brandes 1989; Newman and Rice 2002. In-Delta flows in the Sacramento River channel are projected to decrease substantially once the new North Delta diversion (CM1) begins operations. Thus, the DEIS/DEIR and Draft Plan should anticipate that survival of fall-run Chinook salmon migrating through the Delta in the Sacramento River will decline substantially. Instead, the DEIR/DEIS and Draft Plan fail to adequately analyze survival rates of fry and parr fall-run Chinook salmon in the Delta, despite the fact that this represents most fall-run Chinook salmon migrating into the Delta.	The analysis indeed analyzes fall-run Chinook salmon survival rates for each alternative using the Delta Passage Model (DPM). Please see Impact AQUA-78 for each alternative for details.
1723	391	DPM (Delta Passage Model) is not an appropriate tool for modeling cumulative fall-run Chinook salmon through-Delta survival rates because most fall-run Chinook salmon enter the Delta as fry or parr (foraging fish). Moyle 2002; Williams 2006. DPM is based on the relative success of migrant-strategy, hatchery-produced salmonids (such as late-fall run Chinook salmon) and thus cannot be used to understand fry and parr mortality in the Delta. Draft Plan at 5.C.5.3-65). We note that foraging fall-run Chinook salmon should be expected to experience higher through-Delta mortality than migrant strategy fish because (a) they are smaller, (b) they spend a longer time in the Delta, (c) foraging exposes fish to additional risk of predation compared with migratory behavior. Even applying DPM to large fall-run (or spring-run) smolt is subject to significant caveats as these fish migrate through the Delta in a different season than do late-fall run salmon; there is no reason to expect that survival rates (and even relative survival rates) in Delta channels remain unchanged across seasons as	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Chapter 11 of the EIR/EIS discloses the limitations of using the DPM in Section 11.3.2.

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		numerous influences on predator efficiency (temperature, light penetration, SAV coverage, etc.) may all change seasonally.	
1723	392	The Effects Analysis applies a modification of Newman's (2003) methodology to estimate survival of fall-run smolt survival through-Delta under different Alternative 4 scenarios. Again, smolts are expected to be a small fraction of fall-run entering the Delta. EBC2_LL (existing biological conditions 2-late long term) outperforms both ESO (evaluated starting operations) and HOS (high outflow scenario) in the early long term, meaning that fall-run survival through the Delta is lower under the Draft Plan than under the status quo. Draft Plan Appendix 5C at Tables 5C.5.3-115 and 5C.5.3-117. In the late long term, through Delta survival is higher under the baseline (EBC2_LL) than under ESO. See Draft Plan at 5C.5.3-238 (Table 5C.5.3-116). Under HOS in the late long term, through Delta survival is similar to and may slightly exceed the baseline. Draft Plan at Table 5C.5.3-117. It is not clear that any of these results is statistically significant, and the Draft Plan should analyze these results using statistical techniques appropriate for paired model observations. Whatever the outcome, it is apparent that differences in through-Delta survival (if there are any) as estimated by this modification of the Newman (2003) methodology will be slight -- not enough to claim any benefit to fall-run Chinook salmon smolt survival through the Delta and certainly not enough to achieve the Draft Plan's objectives for through Delta survival (FRCS1.1).	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Chapter 11 of the EIR/EIS for analysis of the effects of the alternatives on fall-run Chinook salmon.
1723	393	The DEIS/DEIR projects no overall change in through Delta survival for fall-run Chinook salmon migrating through the Delta from the San Joaquin River; decreases in through-Delta survival of ~3% in wet year survival are expected to be balanced by improvements in survival of ~1% during dry years. DEIS/DEIR at 11-1459. Setting aside the fact that the small projected changes in through-Delta survival are not equal (and would only "balance" if dry years were more frequent than wet years), the analysis demonstrates that the Draft Plan is likely unable to improve through-Delta survival rates of fall-run Chinook as specified in the biological objective for this species (objective FRCS1.1). Moreover, current rates of through-Delta survival are expected to lead to extirpation of fall-run Chinook emigrating from the San Joaquin basin in the very near future. Draft Plan Appendix 3G; NMFS Comments on the Phase I WQCP Update. We note that benefits to San Joaquin River fall-run Chinook salmon that are assumed to arise from measures in the conservation strategy (e.g. as described at 3.3.-158 through 159) cannot offset the impacts if fall-run Chinook salmon continue to suffer with status quo levels of through-Delta survival.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Alternative 4A evaluates through-delta survival of fall-run Chinook salmon in Impact AQUA-78. Alternative 4A does not include biological goals and objectives for species. Overall and in light of these uncertainties, Alternative 4A would not have an adverse effect on through-Delta migration because the reduction in south Delta exports and the Head of Old River operable gate generally would be expected to benefit through-Delta survival.
1723	394	Draft Plan objectives for delta smelt are inadequate to attain the NCCPA standard for [delta smelt]. The delta smelt geographic range for spawning, egg incubation, and early rearing fall is almost entirely contained within the Plan Area. See, e.g., Moyle 2002; Bennett 2005; Nobriga and Herbold 2009; DEIS/DEIR at 11-1300. Thus, as discussed above, under the NCCPA the BDCP must provide conservation measures sufficient to achieve conservation (recovery) of this species.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	395	The Draft Plan identifies a global goal for delta smelt to "Remove delta smelt from the state and federal lists of endangered species through restoration of its abundance and distribution" Draft Plan at 3.3-107. The Draft Plan lists three global objectives that it believes, if attained, will lead to attainment of the global goal (objectives define goals in SMART terms [specific, measureable, attainable, relevant to the goal they describe, and time-bound]). The objectives relate to increased abundance, reduced entrainment, and	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant

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		increased spatial distribution of this species. However, the Draft Plan completely ignores the need to maintain or restore the historical range of life history variation of delta smelt that is so important to its future viability. See Bennett 2005; Nobriga and Herbold 2009.	impacts to either delta smelt or longfin smelt
1723	396	The Draft Plan appears to adopt the U.S. Fish and Wildlife Service 1996 Draft Recovery Plan's global objective for spatial distribution of delta smelt. Draft Plan at 3.3-107. This global objective is inadequate as it disregards the large portion of delta smelt's historic range and historic spawning habitat (including the Central Delta and San Joaquin River, see Wang 2007). USFWS 1996 Draft Recovery Plan at 16. The USFWS correctly identifies the need to restore delta smelt to its historic (1967-1981) distribution prior to de-listing. USFWS 1996 Draft Recovery Plan at 21. But its specific description of that range is inappropriately narrow. Also, as written, the Draft Recovery Plan's objective (and thus the BDCP's global objective) for spatial distribution allows for the species to be detected in just one sampling locality in 40% of years -- for a species that is critically imperiled because of its limited geographic range, such an outcome cannot represent success of a conservation plan. The Draft Plan includes several measures that it claims will benefit delta smelt in the south Delta, including reducing exports from the south Delta pumping facilities (CM1) and restoring shallow sub-tidal habitats in the south Delta ROA (Restoration Opportunity Area), e.g. Draft Plan at 3.3-112; thus, the Draft Plan should acknowledge its intent to restore delta smelt to their historic range, including in the south Delta.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	397	The BDCP-specific set of these objectives calls for (1) improving fecundity, (2) limiting entrainment, and (3) achieving target abundance. Draft Plan at 3.3-108. The first two of these objectives are related to the productivity attribute of viability while the third objective is related to the abundance viability attribute. See McElhany et al. 2000. The first two of these "abundance" objectives actually relate to "productivity", as they address biological rates, not threshold values of abundance or ecosystem capacity to maintain abundance levels. The first (DTS1.1) calls for increases in delta smelt fecundity -- this is a laudable target, but the statement has none of the specificity required of SMART objectives [specific, measurable, attainable, relevant to the goal they describe, and time-bound]. What does it mean to "increase" fecundity? How much? And by when must this increase occur? DTS1.1 does not provide answers to these questions; thus, it is not useful in guiding development or evaluation of restoration actions in the Draft Plan or in guiding adaptive management of the BDCP following implementation. Without more specificity, it is not possible to know how actions described by this or other Plans will contribute towards attainment of this biological outcome.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	398	The second of the delta smelt targets related to productivity calls for limiting entrainment of delta smelt. As described for longfin smelt (the parallel objectives are nearly identical), DTS1.2 is inadequate to conserve or restore delta smelt. First, there is no time-bound for this objective. Second, the objective is less protective of delta smelt than protections already offered by the USFWS 2008 Biological Opinion; for instance, because the target is constructed as a 5-year running average, extremely high rates of entrainment (i.e. up to 25%) can occur in a single year without triggering a response from BDCP's implementing agency and adaptive management process. USFWS 2008 at 387; see discussion supra. Such a result could be devastating to the population. See Kimmerer 2011. Also, as the Draft Plan notes, entrainment rates are highly variable due to environmental conditions in any year, and measuring entrainment as a 5-year running average obscures the impact of measures identified in the Draft Plan that are intended to reduce entrainment as these effects are conflated with "natural" variance in entrainment and entrainment-related risk.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt

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		<p>Again, we note that the second component of the DTSM1.2 (assure that entrainment risk is evenly distributed over the adult migration and larval-juvenile life stages) is not adequately described to allow us to understand what this target will accomplish or how it will be implemented. As with the similar longfin smelt entrainment objective, this component of the "entrainment objective" could easily be made into its own "life history diversity" sub-objective or stressor reduction target and defined as a limit on entrainment on a short, within year time step (e.g. a maximum entrainment of x% in any one or two week period). Such an objective would limit disproportionate entrainment impacts on any one temporal segment of the critical life stages of this species. Combined with a single-year limit (e.g. ≤5%) and a 5-year running average (e.g. ≤3%), a within-year time step would provide protection against entrainment impacts to life history diversity, productivity, and abundance.</p>	
1723	399	<p>This delta smelt "objective" is actually a stressor reduction target, as is the parallel target for longfin smelt. Although entrainment rates are an important source of delta smelt mortality that the BDCP must reduce, they are not the only factor related to delta smelt productivity (population growth rate potential). [Footnote 76: This omission is partially (though inadequately) resolved in the BDCP-specific objectives for delta smelt which identify a target for fecundity (another driver of population growth potential) and in the conservation measures for this species which seek to address other sources of mortality for this species. The scattering of components of species' productivity across the Draft Plan's conservation strategy for delta smelt represents its general confusion about attributes of species' viability and the function of different levels of the logic chain framework for conservation planning.] The Draft Plan should have an objective for delta smelt survival rates (productivity) of larval, juvenile, and sub-adult delta smelt that complement its stated (though non-specific) objective for increased fecundity. Both of these productivity objectives should be consistent with the goal of delisting the species as quickly as possible; SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound] targets for reducing particular stressors (e.g. entrainment) to levels that will allow attainment of the required survival objective should be clearly articulated as stressor reduction targets. However, substituting biological outcomes (productivity expressed as survival and/or fecundity rates) for particular strategies chosen to achieve those outcomes (e.g. reduction in entrainment) inappropriately narrows the options available to achieve desired biological conditions. In other words, even were entrainment rates reduced more than is called for in the Draft Plan target, desired productivity (population growth rates) for delta smelt might not be achieved if other forces (water quality, predation) limited survival rates; attainment of the Draft Plan's targets ("success") while failing to produce desired levels for each attribute of species viability does not represent success.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt</p>
1723	400	<p>Another objective for delta smelt sets targets to "increase the extent of suitable habitats..." Draft Plan at 3.3-111. This objective in the Draft Plan inappropriately changes from a spatial distribution objective that defines a desired biological outcome (expressed in the parallel global objective as detecting delta smelt in various areas throughout the Plan Area, see Draft Plan at 3.3-107) to creating "habitat" -- the two are not the same. The current BDCP objective DTSM2.1 is actually a stressor reduction target and, as defined, is more related to providing the habitat capacity the Draft Plan believes to be necessary to support delta smelt abundance. The term "habitat" can encompass everything from physical characteristics to biotic interactions (and the Draft Plan does describe these to a certain extent) and, in choosing so vague a term as "habitat" to supplement the very specific desired outcome (repeated detection of delta smelt successful use of various areas), the Draft Plan immediately loses focus on what needs to happen to restore this species to a geographic</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures.</p> <p>Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt</p>

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		range that will represent a viable delta smelt population. For example, whereas the inadequate global objective at least specified the frequency with which delta smelt must be detected in certain areas, the BDCP-specific objective states only "Suitable habitat for delta smelt should also be distributed geographically within the Plan Area to provide a diversity of habitat locations for delta smelt." Draft Plan at 3.3-112; this is not a SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound] objective and thus obscures the Plan's intentions and limits the ability to rectify inadequate performance, because adequate performance has not been defined.	
1723	401	The Draft Plan has no adequate SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound] target for improving and conserving the spatial extent of delta smelt. The erosion of the delta smelt's geographic range is a major concern for this species' conservation and restoration as they have an extremely small spawning range, that is much-reduced from historical conditions. USFWS 1996; Bennett 2005; Nobriga and Herbold 2009. Restricted geographic ranges (i.e., the area encompassed by successful spawning at the population-level) are well-correlated with extinction risk among freshwater fishes. Rosenfield 2002. The same is true for other species. See Macarthur and Wilson 1967; Meffe and Carrol 1994; Laurance et al. 2002. In fact, the Draft Plan identifies a "limited geographic range" as a threat to this species, see Draft Plan at 3.3-98, and it defines restoration of spatial distribution as global goal and objective for restoration of delta smelt, see Draft Plan at 3.3-104. It also claims that the conservation measures will improve spatial distribution of juveniles and pre-spawning adults. Id. at 3.3-99. But neither the global objective nor BDCP-specific objective will ensure an adequate spawning range for this species, which is increasingly confined to the northwest corner of the Delta.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	402	The Draft Plan objective (and stressor reduction targets and conservation measures that flow from them) must provide for increased distribution of spawning among delta smelt into the central Delta and lower San Joaquin River. Delta smelt spawning, larval, and post-larval distribution is closely tied to Delta outflow and salinity. See, e.g., Dege and Brown 2004; Bennett 2005; Nobriga and Herbold 2009. Both Delta outflow and salinity would be heavily influenced by water project operations and restoration actions under the Draft Plan. The failure to adequately define necessary spatial distribution targets for this species (which arguably experiences immediate risk from its severely constrained geographic range that is equal to or greater than the risk it experiences from its extremely low abundance), and to design measures to alleviate this risk, is a serious shortcoming of the Draft Plan's strategy to conserve and restore delta smelt.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	403	The Draft Plan identifies no target to conserve and restore life history diversity among delta smelt. Differential impacts to certain life history variants has been identified in delta smelt and it is believed that diversity in spawning timing, growth rates, repeat spawning, and fecundity play a critical role in the delta smelt population. Bennett 2005; Nobriga and Herbold 2009.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	404	The Draft Plan's entrainment objective for delta smelt (DTS1.2) actually suggests the benefit of protecting life history diversity in this species, as it states that entrainment should, "Assure that proportional entrainment risk is evenly distributed over the adult migration and larval-juvenile rearing time periods." Draft Plan at 3.3-104. This clause is not defined adequately (not SMART [specific, measureable, attainable, relevant to the goal they describe, and time-bound]) to allow for evaluation of its effects or implementation through	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt

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		conservation actions.	
1723	405	The Draft Plan states as a "landscape objective" for delta smelt the extremely general intent to "Maintain or increase the diversity of spawning, rearing, and migration conditions for native fish species in support of life history diversity," Draft Plan at 3.3-99, but it contradicts that intention stating that "maintaining or increasing life-history diversity is not as applicable to delta smelt [because] delta smelt do not have the range of life-history strategies...that species such as Chinook salmon have," Draft plan at 3.3-100. This statement is simply false. For instance, otolith studies have shown significant variation in life history strategies and differential survival rates depending upon the timing and location of spawning and rearing. See, e.g., Hobbs et al. 2007; USFWS 2011 at 173 (draft Biological Opinion).	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	406	As elsewhere, the Draft Plan's failure to identify objectives that represent desired outcomes for each attribute of species viability (as opposed to targets for reduction of stressors the Draft Plan believes will produce those desired outcomes) impedes its ability to develop specific, measureable targets that can be used to (1) evaluate the Draft Plan prior to implementation, (2) determine its progress towards these targets and adjust, as necessary, following implementation, (3) identify stressors that impede attainment of the targets, and (4) design conservation measures that provide the right level of benefit to the species. In this case, the failure to develop specific metrics for measuring the maintenance or restoration of life history diversity among the delta smelt population is a key failing of the Draft Plan; delta smelt are threatened by human-induced loss of critical life history diversity, see Bennett 2005, and this threat will be allowed to persist (and may be increased) under the Draft Plan.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS. The proposed project would not result in significant impacts to either delta smelt or longfin smelt
1723	407	Even the objectives that the Draft Plan does specify are inadequate to conserve the species in the Plan Area. The Draft Plan's biological objective for abundance (objective DTSM1.3, see Draft Plan at 3.3-108) is inadequate. The objective, while specific, measureable, achievable, and relevant to its associated goal, is not time-bound. There is no indication of when the Draft Plan intends to achieve this target. Without a specific time-bound, no trigger exists to force an evaluation of progress towards the target -- without a specific trigger, adaptive management is unlikely to occur. Moreover, this objective only requires that its targets, to achieve a Recovery Index ≥ 239 for at least two years of any consecutive 5-year period, are achieved once; as written, the delta smelt population can decline swiftly after attaining this target one time. Even the "floor" of the objective (limiting any two consecutive years to a mean Recovery Index of 84) can result in extinction without violating the objective; for instance, if the Delta Smelt Recovery Index in one year is 169, then extinction (Recovery Index of 0) could occur the next year without causing the 2-yr average to drop below 84. The abundance objectives for delta smelt must be rewritten to prevent extinction (e.g., establishing minimum values for any 1 year) and to require a high level of performance after attaining intermediate targets (e.g., after hitting 239 on the Recovery Index). As currently drafted, these objectives for delta smelt are inadequate, and the objectives in the Draft Plan should be revised consistent with these comments.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS.
1723	408	The Draft Plan fails to identify and address the correct stressors on [delta smelt]. The Draft Plan presents a scattered and unbalanced description of stressors on the delta smelt population, ignoring some stressors entirely and focusing myopically on others. In tables identifying the Draft Plan's objectives, stressors, and stressor reduction targets, it	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1

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		identifies as stressors only "food" and "habitat" (which is partially determined by the availability of "food").	through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS.
1723	409	As with longfin smelt, the Draft Plan does not specifically identify entrainment rates at the south Delta export facilities as a stressor, even though it sets an objective for reducing entrainment rates. Draft Plan at 3.3-108. Entrainment is a well-studied and well-documented stressor on the delta smelt population that has population level effects. Kimmerer 2008, 2011; Kimmerer and Nobriga 2008; Mac Nally 2010; Thomson 2010; Maunder and Deriso 2011; Rose et al. 2013a,b; see discussion above. The failure to clearly identify this stressor is a major omission and is inconsistent with the best available science.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. See Master Response 5 regarding BDCP Conservation Measures. Regarding the proposed project's (4A) possible impacts to delta smelt and longfin smelt see impacts AQUA-1 through AQUA-32, Section 11.3.5.2, of this Final EIR/EIS.
1723	410	The Draft Plan is also inconsistent in its description of the type of habitat that delta smelt need. There is no evidence that delta smelt abundance suffers from lack of spawning habitat (i.e. that there is not sufficient habitat for delta smelt to spawn in), but there is ample evidence that the spatial extent of delta smelt spawning habitat is increasingly limited to an extremely small fraction of its historic range. Nobriga and Herbold 2009. As we describe above, the Draft Plan acknowledges these facts in some places but then claims benefits from what it believes will be an increased abundance of delta smelt spawning habitat (which is not well-described in the literature) while ignoring the need for increased spatial extent of that habitat.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. The uncertainty in the importance of the amount of spawning habitat was acknowledged in the public draft BDCP (see page 5.5.1-7). As noted in that section, restoration of tidal habitat has the potential to increase the extent of spawning habitat, particularly in the Cache Slough sub-region. Nobriga and Herbold (2009) suggest that the constriction of spawning habitat may be because of increased water clarity (and lower sediment supply), particularly in the south Delta, and greater water diversions than occurred historically. Less south Delta exports have the potential to improve the latter of these factors, and the potential increase in water clarity because of sediment removal by the proposed north Delta intakes may be more relevant to downstream rearing areas during lower flow months (see section 5.5.1.2.1 of BDCP public draft; also, see Chapter 11 in the FEIR/EIS).
1723	411	The Draft Plan's description of stressors also fails to acknowledge the importance of reduced flows and an altered Delta hydrograph as important stressors that affect "habitat" for this species (including suitable salinity conditions). As a result of failing to acknowledge the importance of the flow stressor to this species, the Draft Plan is equivocal about the need for flows and assumes that it can provide adequate low salinity habitat for delta smelt simply by constructing new habitats. The effect of outflows on the extent, availability, and quality of delta smelt habitat in the spring, summer, and fall months is well-documented. Dege and Brown 2004; Bennett 2005; Nobriga et al. 2008; Nobriga and Herbold 2009; Kimmerer et al. 2009; Feyrer et al. 2007, 2010. In particular, several studies have related the long-term decline in flows to limited habitat extent during the fall months and to fluctuations in delta smelt abundance indices. Feyrer et al. 2007; Feyrer et al. 2010; USFWS 2008 Biological Opinion; USFWS 2011 (draft Biological Opinion). The 2008 Biological Opinion requires implementation of a "Fall X2" action. USFWS 2008.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Rather than assuming that the BDCP "can provide adequate low salinity habitat for Delta smelt simply by constructing new habitats", as the commenter suggests, the public draft BDCP recognized the potential importance of flow and the need to determine flows necessary, in conjunction with the other conservation measures, to provide for the conservation and management of delta smelt. This was discussed in section 5.5.1.1.2 of the public draft BDCP, related to the decision-tree process for fall outflow for delta smelt. The uncertainty surrounding the importance of fall X2 was recognized with the inclusion of the Decision Tree for fall X2 under CM1. Studies to evaluate uncertainty regarding flow effects on habitat and fish populations will instead be performed under the Collaborative Science and Adaptive Management Program described in the biological assessment and the biological opinion for the revised proposed action.
1723	412	The Draft Plan fails to adopt the best available science, which confirms the role of freshwater flow in affecting the habitat area available to this species. As a result, the Draft Plan's description of its "decision tree" process to determine optimal outflows for covered species is inaccurate because it does not "initially use operating criteria based on the best information available," Draft Plan at 3.3-113, and this strategy for determining outflow requirements (as described in CM1 Water Facilities and Operation) is inadequate -- if the Draft Plan ignores the best available science that is currently available, there is no assurance that it will utilize additional science as it becomes available in the future.	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 44 for additional detail on the decision tree.
1723	413	Conservation measures do not adequately address known stressors for [delta smelt] and/or their impacts are overstated. As elsewhere in the Draft Plan, the rationale behind different conservation measures	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Conservation measures intended to address known stressors were developed over several years in

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		intended to benefit delta smelt contradicts the Draft Plan's explanation of why this species has declined. Some of the Draft Plan's conservation measures do not address the identified stressors (even conceptually) and, in some cases, will aggravate those stressors. For example conservation measures that the Draft Plan and DEIS/DEIR expect will generate large quantities of important food items for delta smelt (e.g. CM2 and CM4) ignore the Draft Plan's favored causes of food declines (invasive clams and/or nutrient ratio limitations on prey productivity). These and other logical disconnects between the Draft Plan's description and prioritization of stressors on delta smelt and the actions it proposes to conserve species in the Plan area are further described in our discussion of longfin smelt.	association with resource agencies and stakeholders; the background on the process is provided in Appendix 3.A of the public draft BDCP. In relation to the examples provided by the commenter, the public draft BDCP (pages 5.5.1-41 to 5.5.1-42) discusses the potential relationship between the BDCP's proposed CM4 and the foreseeable action of the Sacramento Regional Wastewater Treatment Plant discharge upgrade, which would affect nutrient ratios; as also noted in that section, the conceptual model of Glibert et al. (2011) suggested the discharge upgrade could also affect invasive clams, based on studies from other areas. The effects analysis acknowledges the uncertainty in food production increases from BDCP's proposed CM4, because of factors such as invasive clams.
1723	414	We [Defenders of Wildlife, Natural Resources Defense Council, The Bay Institute, and Golden Gate Salmon Association] note that the operation of a new North Delta diversion (CM1) is not consistent with ameliorating an important stressor on delta smelt: low turbidity. Delta smelt are strongly associated with higher turbidity waters within their range and recent reductions in turbidity are among the stressors believed to affect this species' predation-related mortality and productivity overall. Feyrer et al. 2007; Feyrer et al. 2011; Herbold and Nobriga 2009. The Draft Plan acknowledges the need to raise turbidity levels within the delta smelt range, and identifies lower turbidity as a stressor. Draft Plan at 3.3-100; Draft Plan, Appendix F, Attachment 5C.D; Draft Plan, Appendix 5.F at 5.F-ii. The Draft Plan includes turbidity as part of numerous objectives. See Objectives L2.2 and L2.11, Draft Plan at 3.3-103; Objective TPANC2.1, Draft Plan at 3.3-105; Objective DTSM2.1, Draft Plan at 3.3-111. And the Draft Plan designs specific conservation measures (CM 13) to address the problem locally. The Draft Plan states: "For this effects analysis, it was assumed with very high certainty that water clarity is an attribute of critical importance to delta smelt larvae, juveniles, and adults." Draft Plan at 5.5.1-30 (emphasis added).	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As the commenter notes, the effects analysis does acknowledge that there is potential for increased water clarity (lower turbidity), because of sediment removal at the north Delta intakes (CM1) and also sediment capture (CM4) (see section 5.5.1.2.1 in Chapter 5 of public draft BDCP; Also, see Chapter 11 in the FEIR/EIS for information on sediment loss at the north Delta intakes). However, as also noted in the same section, the restoration of shallow-water areas under the BDCP has the potential to re-suspend sediment in these areas, which would make them relatively turbid. The effects of sediment removal and sediment capture may be lessened by reintroduction of removed sediment to the system, as well as use of reusable tunnel material in restoration, provided these materials meet criteria described in Avoidance and Minimization Measure AMM6 (see Appendix 3.C of public draft BDCP). These factors and further discussion of the main uncertainties, potential research actions, and link to adaptive management and monitoring will be provided in the final BDCP. Please also see Master Response 12 for more information on reusable tunnel material.</p> <p>The revised Preferred Alternative includes an environmental commitment to reintroduce sediment diverted at the North Delta intakes to the Delta, at locations and in a manner to be approved by the fish and wildlife agencies as beneficial to Delta and longfin smelt habitat.</p>
1723	415	The Draft Plan also identifies low turbidity as a stressor on longfin smelt, Draft Plan at 3.3-114, Sacramento splittail, Draft Plan at 3.3-174, green sturgeon, Draft Plan at 3.3-183, white sturgeon, Draft Plan at 3.3-196, and water quality in the Delta generally, Draft Plan at 3.2-6. In addition, the Draft Plan should have identified low turbidity conditions as a stressor on delta smelt as decreased turbidity is associated with higher predation-related mortality for many native species. See Gregory 1993; Gregory and Levings 1998.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 in the Final EIR/EIS analyses potential turbidity effects on Delta smelt, while recognizing the importance of turbidity, specifically related to predator-prey interactions, habitat quality, and spawning migrations.</p>
1723	416	When CM1 operations begin, water and the turbidity it carries will be removed from the lower Sacramento River and the north Delta -- the very areas the Draft Plan targets for delta smelt "restoration." The U.S. Fish and Wildlife Service previously expressed concern with the effect of CM1 operations on turbidity on delta smelt and longfin smelt as follows: "The effects analysis acknowledges that a portion of the Sacramento River sediment supply will be diverted at the North Delta intakes, and that that diversion might be detrimental to native fishes, estimating the average effect to be minus 8-9% of sediment. It is hard to draw definitive conclusions about the ultimate effect of this change, but an average loss of 8-9% of the sediment supply that would ordinarily pass into the Delta and Suisun Bay likely implies higher average water clarity throughout the year. Besides potentially negative effects on delta smelt and longfin smelt and their habitat, which benefit from turbid water, clearer water would encourage growth of exotic aquatic plants and related effects in many areas of the North and West Delta.	<p>The potential negative impact to turbidity/water clarity is acknowledged in the FEIR/S by inclusion of an environmental commitment to reintroduce the sediment to the water column in order to maintain Delta water quality (specifically, turbidity, as a component of delta smelt critical habitat). DWR will collaborate with USFWS and CDFW to develop and implement a sediment reintroduction plan that provides the desired beneficial habitat effects of maintained turbidity while addressing related permitting concerns (the proposed sediment reintroduction is expected to require permits from the Central Valley Regional Water Quality Control Board and USACE). USFWS and NMFS will have approval authority for this plan and for monitoring measures, to be specified in the plan, to assess its effectiveness. This is described in Appendix 3.G of the FEIR/EIS.</p> <p>In addition, the effects of less sediment on downstream bays are analyzed in Impacts AQUA-218 (related to operations) and AQUA-220 (related to habitat restoration), where the effects are found to be less than significant with the implementation of sediment reintroduction. This in part is related to the existing sources of sediment to the downstream bays, which in large part are from smaller, local watersheds rather than from the Central Valley.</p>

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		<p>...</p> <p>[Diversion of turbidity at a north Delta intake] ...remains an important issue, because we are concerned that an average loss of 8-9% of sediment will have greater negative effects on delta smelt and longfin smelt and their habitats downstream of the diversions than are acknowledged in the effects analysis and net effects, and will likely encourage the growth of exotic aquatic plants in the lower Sacramento River and in off-channel tidal marsh areas."</p> <p>(USFWS 2013 Progress Assessment at 16; see id. at 8.)</p> <p>Both USFWS and CDFW raised similar concerns in earlier analyses. USFWS Red Flags 2012; CDFW Red Flags 2012. The Delta Independent Science Board also raised similar concerns. Delta ISB 2014 at B-24. Unfortunately, as discussed below, the DEIS/DEIR improperly understate the negative effects of BDCP on delta smelt, including the negative effects of CM1 operations on turbidity levels throughout the Delta and those impacts to delta smelt and other species.</p>	<p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p>
1723	417	<p>Projected outcomes for delta smelt are inaccurate, and/or do not attain the conservation standard for [delta smelt]. In addition, presentation of these results is incoherent, biased, and unacceptably confusing.</p> <p>The Draft Plan and DEIR/DEIS both demonstrate that BDCP is likely to result in substantial negative impacts to delta smelt and is unlikely to achieve the biological objectives for the species. This is clear even though both documents fail to synthesize the expected outcomes of BDCP conservation measures and operations to delta smelt. There are numerous life cycle models and statistical models that the documents can and should have used and/or modified by the Draft Plan effects analysis and the DEIS/DEIR to assess the impacts to delta smelt of the Draft Plan and operational alternatives. Statistical approaches to understanding cumulative effects of changes in multiple environmental variables have been developed and demonstrated, for example by Thomson et al. 2010, Mac Nally et al. 2010. Life cycle models described by Rose et al. (2013a,b) should also have been applied to understand the combined effects of changes to environmental conditions that would result from BDCP. Failure to provide such analyses represents an unacceptable omission from the DEIS/DEIR. Numerous peer reviews have also expressed concern that the Draft Plan and DEIS/DEIR inappropriately excluded some of these life cycle models. DSP Independent Science Review Panel Report 2014 at 14, 21, 31-32 (expressing concern that some models were inappropriately dismissed, and stating on pages 31-32 that, "Appendix 5G excluded delta smelt life cycle models in the Effects Analysis without adequate justification."); Delta ISB 2014 at B-43, B-45.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.</p> <p>The public draft BDCP was intended to provide an appropriate effects analysis of the proposed BDCP for delta smelt and other covered fish species, while attempting to acknowledge uncertainty in conclusions. The Delta Science Program Independent Review Panel noted that the treatment of uncertainty and links to adaptive management needed to be strengthened, in addition to guiding the scientific community by highlighting research priorities to address critical information gaps. To this end, the final BDCP divides each section of the beneficial and adverse effects to covered fishes into two subsections: one consists of the previous text (with any necessary updates/revisions) and is titled Analysis and the other, following the Analysis section, is titled Main Uncertainties, Potential Research Actions, and Link to Adaptive Management and Monitoring. The latter subsection refers back to Chapter 3 and summarizes potential research, monitoring, and the main uncertainties associated with the conservation measures discussed in the preceding Analysis section.</p> <p>With respect to exclusion of delta smelt life cycle models, although several of the models met the main criteria for consideration of inclusion in the BDCP effects analysis (i.e., inclusion of Plan Area, inclusion of Study Area, inclusion of covariates affected by the BDCP, completion at the time of BDCP preparation, and peer review), these models included food-related covariates (zooplankton abundance) for which inputs were uncertain and unavailable in relation to BDCP effects. Note that the Delta Science Program Independent Review Panel's suggestion that "the BDCP Net Effects assessment indicated zooplankton was only of moderate importance to delta smelts (Figure 5.5.1-5)" and that therefore "some assumptions about zooplankton could have been made, allowing life-cycle modeling to be performed" is incorrect; the referenced figure is a qualitative assessment of the effect of the BDCP on the attributes affecting delta smelt, with the effect reflecting the importance of the attribute and the magnitude of the potential effect of the BDCP on the attribute; as described in sections 5.5.1.1.1 and 5.5.1.1.2 of the delta smelt effects analysis in the public draft BDCP, it was assumed that zooplankton abundance is of critical importance to larval and juvenile delta smelt, based on published literature. The model of Rose et al. (2013) became available after the preparation of the public draft BDCP but in any case has the same limitation as the other excluded models, i.e., requiring food-based inputs, as well as requiring extensive expansion to accommodate DSM2 grid revisions for the BDCP's proposed restoration areas.</p> <p>Please also see Master Response 17 and Master Response 5 regarding attainment of NCCPA standards and</p>

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1723	418	<p>Entrainment rates for adult and larval-juvenile delta smelt are likely to exceed targets set by Draft Plan objectives and claims of modest CM1 benefits are likely overstated.</p> <p>The Draft Plan's claim of reduced entrainment resulting from the BDCP is confused, internally inconsistent, and unsubstantiated. The Effects Analysis and DEIS/DEIR confuse the issue by discussing separately the results of its analyses of larval-juvenile and adult delta smelt; the outcome that matters is the proportional entrainment to the delta smelt population as a whole (i.e. the Draft Plan's objective and overall impacts to productivity must be assessed by the additive effect of entrainment to the two life history stages). The Draft Plan claims relative reductions of ~20% in both adult and larval entrainment under BDCP, but these results translate to an average reduction in entrainment of only 1.5% or 2% respectively. The DEIS/DEIR analysis reveals only tiny differences in entrainment rates between Alternative 3 operations and the NAA (No Action Alternative). Draft Plan at Figures 11-3-1, 11-3-2 (which is actually the same figure as the previous, though labeled differently)). The DEIS/DEIR identify similarly small differences in entrainment among Alternative 4 operational variants H1, H3, and H4. Draft Plan at Figures 11-4-1 and 11-4-2. Although, in most years, absolute entrainment rates for each of the Alternative 4 variants, are projected to be well above the 5% target of identified in the conservation strategy, all of the differences between BDCP operations and NAA are less than 5% in absolute terms. These "differences" in modeled outcomes are unlikely to represent any change at all in actual entrainment rates within year-type comparisons; however, if it can be shown that the projected differences are significant within the error of the modeling technique, then it must also be concluded that Alternative 4/H3 has higher entrainment rates than NAA in most years and that all Alternative 4 variants have higher entrainment rates than NAA in Critically Dry years. DEIS/DEIR at Figure 11-4-1.</p>	<p>ESA compliance.</p> <p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Regarding exceedance of draft objectives, as noted in section 5.5.1.1.3 in Chapter 5 of the public draft BDCP, real-time management decisions currently occur and would continue under the BDCP, which could alter export rates from those modeled. The estimates of entrainment in the public draft BDCP are best thought of as indices of potential differences, as opposed to absolute estimates of entrainment, and therefore may exceed proposed biological objectives.</p> <p>Regarding differences in entrainment shown in Figures 11-4-1, the commenter's conclusions are correct regarding year-specific differences in entrainment; note that across all years, Alternative 4 H3 was estimated to have similar or slightly lower entrainment than under NAA, whereas Alternative 4 H4 was estimated to have lower entrainment.</p>
1723	419	<p>The Draft Plan's entrainment appendix (5B) provides estimates of entrainment impacts for the population as a whole (both age classes considered together) and demonstrates that all Alternative 4 operational variants would have total entrainment rates that are much higher than the 5% annual total average entrainment called for by objective DTSM1.2 (Figure 5.B.6-22 at 5.B-215). [Footnote 77: Only Wet water year types have average entrainment rates close to 5%.] This strongly implies that the BDCP will fail to meet its own entrainment objective for delta smelt and that it will violate the existing incidental take limit of 5% of the adult population in any year. USFWS 2008 Biological Opinion at 387. Nonetheless, the Draft Plan concludes that BDCP will produce a "moderate" positive change for adult delta smelt and a "low" positive change for larval and juvenile delta smelt and (at 5.5.1-28) -- the Draft Plan does not explain the difference in the two ratings given that projected reductions in entrainment of adult and larval-juvenile delta smelt are both less than 5% in absolute terms and the difference between the two outcomes is less than 0.5%.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Regarding exceedance of draft objectives, as noted in section 5.5.1.1.3 in Chapter 5 of the public draft BDCP, real-time management decisions currently occur and would continue under the BDCP, which could alter export rates from those modeled. The estimates of entrainment in the public draft BDCP are best thought of as indices of potential differences, as opposed to absolute estimates of entrainment, and therefore may exceed proposed biological objectives.</p> <p>Regarding the qualitative conclusions over the magnitude of positive change for entrainment under the HOS scenario, the text in the final plan has been revised to reflect a "low" positive change for adults, for consistency with the low positive change for larvae/juveniles.</p>
1723	420	<p>In contrast to the findings in the Draft Plan, agency biologists who participated in August 2013 workshops "suggested that zero or low positive change [for larval-juvenile entrainment] would be warranted on the basis of the high-outflow scenario" and "low to moderate change" would be warranted for adult delta smelt. Draft Plan at 5.5.1-28 (emphasis added). The Draft Plan does not explain why it chose the high end of agency biologist position in each case, but we note that the sum of a "low" and a "moderate" change is qualitatively different than the sum of a "zero" and "low" change -- the Draft Plan's optimism biases the overall projected result.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The text in the plan was revised to reflect a "low" positive change for adults, for consistency with the low positive change for larvae/juveniles. These are consistent with the relative changes estimated with the modeling.</p>

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1723	421	The claim of "high certainty" about the projected benefits of reductions in delta smelt entrainment, Draft Plan at 5.5.1-28, is unwarranted and unsupported by science and by the Draft Plan's own statements. The small differences in projected entrainment rates among variants of the Alternative 4 do not suggest a significant difference (i.e. greater than the intrinsic error rate of the entrainment modeling method). [Footnote 78: As discussed in section 2 of these comments, modeled results are unlikely to occur.] In fact, the Draft Plan contradicts its own statements of certainty in the same paragraph where those statements are offered, as it acknowledges that "modeling of entrainment of larval-juvenile delta smelt -- and indeed other species -- has uncertainty because of real-time management decisions that could occur and alter export rates from those modeled here ... Such decisions cannot be modeled accurately; accordingly, the results of the entrainment analyses should be viewed with some caution" and "the extent of positive change under the BDCP in light of existing and future real-time management cannot be predicted with very high certainty." Draft Plan at 5.5.1-28. Thus, the Draft Plan overrates the certainty of its supposed entrainment benefits to delta smelt entrainment.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The final BDCP was intended to include additional discussion of main uncertainties, potential research actions, and links to adaptive management and monitoring; comparable information will instead be provided in the biological opinion issued on the Preferred Alternative. Related to entrainment, this discussion will note that there is uncertainty in the magnitude of the effect of CM1, as opposed to uncertainty related to whether entrainment would be less under CM1; as noted on p. 5.5.1-28, the conclusion of high certainty was consistent with agency biologist thinking during the August 2013 workshops.</p>
1723	422	The BDCP can attain lower entrainment rates than those projected under Alternative 4 operations. The entrainment rates under Alternative 4 operations are, at best, only slightly better (if at all) from those under baseline operations, but, there appear to be substantial changes in entrainment across year-types, with wetter years showing lower (though still high) entrainment rates. This demonstrates that human management activities in the Delta can have meaningful impacts on delta smelt entrainment.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The estimated entrainment rates reflect differences in water operations across water years that reflect the operational constraints proposed under CM1 both in the south Delta and the north Delta, in addition to other regulatory constraints (e.g., Delta salinity standards). The balance of these various constraints results in differences in the modeled water operations.</p>
1723	423	Differences in Delta conditions among year-types are largely a result of human management decisions, although there are certainly exceptions (such as wet years that follow wet years, when flood control releases occur, or after several drier conditions in a row, when management options regarding Delta flow conditions are severely limited). Differences in year-type conditions in the Delta that are under the control of human export and reservoir release decisions appear to produce measureable differences in delta smelt entrainment.	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1723	424	As the documents acknowledge, "[h]igher outflows under HOS_LLT (high outflow scenario-late long term) could result in lower proportional entrainment loss of larval-juvenile delta smelt than under EBC2_LLT (existing biological conditions 2- late long term)." Draft Plan at 5.5.1-28. In contrast to these smaller changes, the data presented in the Draft Plan and DEIS/DEIR demonstrate that Alternative 7 and Alternative 8 operations project substantial declines in both juvenile and adult delta smelt entrainment. DEIS/DEIR at Figures 11-7-1, 11-7-2 and 11-8-1, 11-8-2. Thus, it is possible for operational decisions to produce larger reductions in delta smelt entrainment that appear capable, with some refinement, of satisfying the BDCP delta smelt entrainment objective (DTSM1.2) and of producing a substantial benefit to the species relative to the NAA (No Action Alternative).	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>As the commenter notes, different operational scenarios can give appreciable differences in estimated entrainment between alternatives. Regarding meeting draft objectives, as noted in section 5.5.1.1.3 in Chapter 5 of the public draft BDCP, real-time management decisions currently occur and would continue under the BDCP, which could alter export rates from those modeled. The estimates of entrainment in the public draft BDCP are best thought of as indices of potential differences, as opposed to absolute estimates of entrainment, and therefore may exceed proposed biological objectives (e.g., for Alternative 4).</p> <p>However, differences in operational scenarios must consider the overall BDCP goal to provide a comprehensive conservation strategy for the Sacramento–San Joaquin River Delta designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework. In this respect, operations under Alternatives 7 and 8, for example, would not achieve the water supply goals of the project, while providing greater reduction in entrainment than Alternative 4. Please also see Master Response 4 regarding the development of alternatives.</p>
1723	425	The DEIS/DEIR and Draft Plan understate and improperly downplay negative impacts to Delta turbidity caused by BDCP, and this will cause significant impacts to [delta smelt]. The concerns with impacts to turbidity found in previous versions of the Draft Plan (see	Most sediment enters the Delta during the winter-spring months, whereas the commenter focuses on 20% sediment removal in spring/summer/early fall (note that these analyses were updated for the preferred alternative, Alternative 4A, California WaterFix, giving somewhat different numbers and an overall ~10%

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		above) were not addressed in the current Draft Plan and DEIS/DEIR; the DEIS/DEIR acknowledges the potential for an 8 or 9% decline in turbidity on average (under ESO_LLT (evaluated starting operations- late long term) or HOS_LLT (high outflow scenario- late long term) scenarios, respectively as compared to NAA (No Action Alternative)). DEIS/DEIR at 11-267. The effect is actually larger than the DEIS/DEIR acknowledges as operations under ESO_LLT are expected to remove well over 20% of the Sacramento River's sediment load in most months April-October. Draft Plan at Figure 5C.D-11. Both sets of results are for "average" conditions, meaning the actual loss of turbidity is likely to be greater in some years (probably in wet years, when the north Delta diversions would divert a greater amount of flow).	sediment removal ; see submitted BA from August 2016). Both the public draft BDCP and the RDEIR/SDEIS (developed and circulated in 2015, which included 3 new Alternatives including the new preferred alternative, 4A. Alternative 4A) included analysis of effects of less sediment. Under Alternative 4A, to the maximum extent practicable, the first and preferred disposition of the sediment removed by the North Delta Diversion will be to reintroduce it to the water column in order to maintain Delta water quality (specifically, turbidity, as a component of Delta Smelt critical habitat). DWR will collaborate with USFWS and CDFW to develop and implement a sediment reintroduction plan that provides the desired beneficial habitat effects of maintained turbidity while addressing related permitting concerns (the proposed sediment reintroduction is expected to require permits from the Central Valley Regional Water Quality Control Board and USACE). USFWS and NMFS will have approval authority for this plan and for monitoring measures, to be specified in the plan, to assess its effectiveness.
1723	426	The DEIS/DEIR and Draft Plan's estimate of average effects on turbidity levels throughout the Delta incorporates anticipated additions of suspended sediment from floodplain inundation on the Yolo Bypass, but the increased acreages and frequency of floodplain inundation anticipated by the Draft Plan were improperly excluded from the baseline as restoration of even greater acreages are required under NMFS 2009 Biological Opinion. [Footnote 79: This is another example of how the improper baselines lead to flawed analysis of potential impacts. See discussion supra regarding improper baselines for analysis.] Thus, the Draft Plan and DEIR/DEIS improperly report lower levels of turbidity impact under BDCP than would occur under an accurate accounting of baseline conditions.	Please see response to comment 1723-425 regarding turbidity.
1723	427	Even given their underreporting of anticipated declines in turbidity under the BDCP, the Draft Plan and DEIS/DEIR downplay the effect of reduced turbidity as a result of CM1 operations.	Please see response to comment 1723-425 regarding turbidity.
1723	428	The DEIS/DEIR does not adequately explain or analyze its interpretation of projected reduced turbidity throughout the Delta, despite the DEIS/DEIR's claim that, for its physical modeling, "A 'difference' was defined as a >5% difference between the pair of model scenarios in at least one water year type in at least 1 month." DEIS/DEIR at 11-202. The Draft Plan declares with "very high certainty" that reduced turbidity is a stressor of "critical importance," found a large proportional negative change in the stressor under BDCP operations, and then concluded that the impacts of such a change are "low" or nonexistent with "low" certainty. Draft Plan at 5.5.1-31. This conclusion is unwarranted and not supported by the scientific information that is available.	Please see response to comment 1723-425 regarding turbidity.
1723	429	The average loss of turbidity of 8-9% (and, more likely, over 20% in some months) is a significant impact. Thus, in addition to concerns about the impact of reduced flows below the north Delta diversion and its effects on through-Delta flows and Delta outflow (addressed elsewhere), it is clear that CM1 aggravates rather than alleviates important stressors like low turbidity that affect most, if not all, of the covered species. The magnitude of CM1 operations reduction of turbidity suggests that it will have a significant negative impact on productivity (for instance through increased predation and decreased foraging success) of delta smelt, longfin smelt, Chinook salmon, and Sacramento splittail.	Please see response to comment 1723-425 regarding turbidity.
1723	430	We note that low river flows below the north Delta diversion may cause additional reductions in turbidity (slower river velocities can result in deposition of additional sediments, beyond those that are diverted directly at CM1) and that there are synergistic interactions between reduced river velocities, stage, and turbidity that would lead to increased predation of delta smelt and other small fishes in the riverine environment below	Please see response to comment 1723-425 regarding turbidity.

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		<p>the north Delta diversion. In addition, the loss of turbidity may further reduce the geographic range and carrying capacity of the Delta for endemic species like delta smelt, see Nobriga and Herbold 2009 at 14, and Sacramento splittail.</p>	
1723	431	<p>The Draft Plan and DEIS/DEIR fail to use the best available science regarding the impacts of tidal marsh habitat restoration, dramatically overstating the likely benefits to delta smelt and understating likely negative impacts to the species under the Draft Plan and some alternatives.</p> <p>There is no indication that delta smelt populations are limited by the availability of shallow sub-tidal or inter-tidal habitats, except as access is limited by unsuitable salinity or temperature conditions. See, e.g., Nobriga and Herbold 2009. For example, the Draft Plan acknowledges that spawning habitat is not believed to be limiting to the population. Draft Plan, Appendix 5F at 5.F-63. So, it is not clear why the Draft Plan concludes with "moderate certainty" that there would be an "very high positive change in the intertidal habitat attribute for occupancy by delta smelt eggs and larvae as a result of restoration actions under CM4 Tidal Natural Communities Restoration" and that there would be a "moderate" positive change in egg and larval habitat from addition of subtidal habitat. Draft Plan at 5.5.1-9. These statements obviously overstate the potential for any benefit to delta smelt spawning habitat (if, indeed, such habitat is limited by the existence of shallow water, and not by the existence of appropriate salinity and flow conditions in existing shallow water habitats). In particular, they assume that all restored wetland acreages, and both inter-tidal and sub-tidal habitats, will benefit delta smelt eggs and larvae when, in fact, inter-tidal habitats are unlikely to provide any direct benefit to either larvae or eggs. Bennett 2005; Nobriga and Herbold 2009.</p>	<p>Please see the response to comment 1723-1 regarding the change in preferred alternative from Alternative 4 to Alternative 4A. Please see Master Response 5 for information about effects of tidal restoration on native fishes assumed in the analysis. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1723	432	<p>Shallow sub-tidal habitats may be locations of egg deposition (though this is unknown; Nobriga and Herbold 2009) but, upon hatching, larval delta smelt are believed to migrate quickly away from nearshore habitats towards the Delta's low salinity zone. Dege and Brown 2004; Nobriga and Herbold 2009 at 5, 9. It is thus highly unlikely that larval delta smelt experience benefits substantial benefit from shallow sub-tidal habitats of the type targeted for restoration by the BDCP. [Footnote 80: Again, we emphasize, as we have many times before, that we are not opposed to restoring tidal and sub-tidal wetlands in the Plan Area as a potential measure that may benefit numerous species and ecosystem processes in the Delta and northern San Francisco Estuary. However, the Draft Plan's heavy reliance on these measures to address all manner of problems for all covered fish species lack scientific support and fails to adequately consider well-known risks of such restoration projects. We, and others, have recommended before that these marsh restoration actions should be implemented as targeted research projects so that uncertainties regarding their potential beneficial and negative impacts can be reduced and so that agencies responsible for BDCP implementation can learn whether there are design or implementation strategies that maximize benefits and minimize risks of these restorations. If the Draft Plan's expectations of benefits from the proposed tidal marsh restoration actions are demonstrated, then an effective adaptive management program can adjust the overall strategy accordingly. See also National Research Council 2010; USFWS 2013 Progress Assessment at 8; Mount and Saracino et al. 2013 at 109.]</p> <p>Numerous reviewers have reached similar conclusions. In their 2013 comments on a previous version of the Draft Plan, the U.S. Fish and Wildlife Service recommended that future versions: "...either (1) show through modeling what subset of "tidal habitat</p>	<p>Please see the response to comment 1723-431 regarding BDCP Conservation Measures.</p>

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		<p>restoration" will have sandy beaches with a turbid, active overlying water column, or (2) avoid the speculation that habitat restoration will create spawning habitat and the speculation that spawning habitat is limiting delta smelt recruitment"; analogous recommendations were made for longfin smelt. USFWS 2013 Progress Assessment at 9. Although some studies have found benefit of "shallow" environments for delta smelt, these almost always refer to the shallow pelagic environments like those in Suisun Bay (Bennett 2005; Hobbs et al. 2006; Nobriga and Herbold 2009), not, as the Draft Plan assumes, those immediately adjacent (within one to several dozen meters) of historic or restored wetlands.</p>	
1723	433	<p>The Draft Plan overstates the acreages of "restored" wetlands that are likely to benefit delta smelt (if those benefits even occur); the U.S. Fish and Wildlife Service stated in 2013 that:</p> <p>"Because delta and longfin smelts are generally pelagic fish, they are not expected to extensively rear in many restored tidal habitats except under very specific circumstances where there is somewhat deep (> 1, but < 4 meters), cool, and very turbid open water (examples: Liberty Island, Suisun Bay, Sherman Lake). These conditions cannot be created everywhere. Current scientific understanding suggests that some regions of the Plan Area are unlikely to be good places for delta and longfin smelt -- especially if the only practical option is to flood subsided Delta islands; existing examples include the interiors of Franks Tract and Mildred Island."</p> <p>(USFWS, 2013 Progress Assessment at 14-15.)</p> <p>Even if delta smelt receive little (or short-lived) direct benefit (related only to spawning and egg incubation) from some fraction of the shallow sub-tidal, nearshore habitats targeted for restoration under the BDCP, the Draft Plan's claims of increased suitable habitat during fall (non-spawning) months (Fall X2 habitat) are overstated and inaccurate. Draft Plan, Table 5.5.1-6; DEIS/DEIR, Table 11-4-3. As the DEIS/DEIR states, with regard to its projections for fall habitat for delta smelt:</p> <p>"The benefits of restored habitat for this species will depend on the success of restoration in creating physical habitat for smelt and in fostering ecological conditions that favor good feeding conditions and production of food upon which smelt can feed. The magnitude of restored habitat benefits is uncertain."</p> <p>(DEIS/DEIR at 11-1298; see discussion infra.)</p>	Please see the response to comment 1723-431 regarding BDCP Conservation Measures.
1723	434	<p>The Draft Plan's assumption that delta smelt may benefit from spawning in shallow sub-tidal habitats fails to consider that such habitats may also be occupied by invasive predators, such as inland silverside, Nobriga and Herbold 2009, and that restoration of these habitats may support predators as well, Grimaldo et al. 2012. Indeed, the potential for restored areas to be colonized organisms that compete with delta smelt for food or prey on different life stages of delta smelt were chief concerns of the earlier expert review of a prior draft of the BDCP. Essex Partnership 2009 (2009 DRERIP reviews). However, these scientific concerns are not addressed at all with regard to habitat restoration in the DEIS/DEIR and are only mentioned in passing in the Draft Plan.</p>	Please see the response to comment 1723-431 regarding BDCP Conservation Measures.
1723	435	<p>The Draft Plan argues that, "The certainty level reflects some uncertainty regarding selection of habitat types by delta smelt." Draft Plan at 5.5.1-10. This is an understatement as, even though spawning microhabitat utilization of delta smelt are unknown, Bennett 2005, they are not believed to include inter-tidal habitats, see Nobriga and Herbold 2009. As</p>	Please see the response to comment 1723-431 regarding BDCP Conservation Measures.

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		the Draft Plan admits, agency biologists polled at an August 2013 workshop concluded that, "... the function of the restored intertidal habitat for [D]elta smelt may have less to do with direct occupation as opposed to other functions." Draft Plan at 5.5.1-10.	
1723	436	<p>Additional uncertainty must be attributed to any benefit to delta smelt because, as the Draft Plan notes, "Use of restored areas by delta smelt will depend on the habitat characteristics within these areas (e.g., the extent of tidal excursion and velocity, temperature, and turbidity)," factors that have not been described or modeled for the BDCP's wetland and sub-tidal restoration areas.</p> <p>Equally important, as described at length above, there is little to no scientific support for the notion that the Draft Plan's habitat restoration conservation measures (e.g. CM2, CM4) will export substantial amounts of delta smelt food items to the pelagic habitats these fish inhabit.</p>	Please see the response to comment 1723-431 regarding BDCP Conservation Measures.
1723	437	<p>Numerous agencies and independent expert reports have found unlikely or, at best, highly uncertain the Draft Plan's proposed linkage between tidal marsh restorations and meaningful benefits to the delta smelt prey base (i.e. the kind of food delta smelt consume in the areas and at the times where food is believed to limit their populations), including:</p> <ul style="list-style-type: none"> - Brown 2003; - National Research Council 2010; - USFWS Red Flags 2012; - USFWS Progress Assessment 2013; - DSC 2013 BDCP Comments; - DSP Independent Science Review Panel Report 2014; - Delta ISB 2014; - Mount and Saracino et al. 2013; - Herbold et al.2014; and - BDCP's own review process involving outside scientific experts. (DRERIP Reviews, Essex Partnership 2009) <p>Each of these reports is described in detail elsewhere in this comment letter.</p> <p>Thus, there is no scientific support for the Draft Plan's conclusions that tidal and sub-tidal habitat restoration will produce: "...a moderate positive change ... on zooplankton abundance for juvenile delta smelt". As noted above, and elsewhere, the Draft Plan's reference to literature it believes supports its alleged benefits to the delta smelt food web are inaccurate and biased.</p>	Please see the response to comment 1723-431 regarding BDCP Conservation Measures. For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546.
1723	438	For instance, the Mount and Saracino et al. 2013 review of the Draft Plan's alleged benefits to the delta smelt food web finds that the methodology applies in the Draft Plan habitat restoration appendix (5E) is flawed in that it:	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 11 of the EIR/EIS addresses effects on delta smelt. Alternative 4A, the preferred alternative, does</p>

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		<p>"...uses "prodQacres" to index the expected productivity of phytoplankton in the restored areas. However, this index is conceptually flawed in two ways. First, it uses an estimate of growth rate rather than production of phytoplankton, which is the product of growth rate and biomass. Second, it assumes implicitly that all phytoplankton growth is available as food for the zooplankton consumed by the smelt species, but analyses published on the San Francisco Estuary and elsewhere show that most of the production is consumed by benthos and by microzooplankton such as ciliates (e.g., Lopez et al. 2006, Lucas and Thompson 2012, Kimmerer and Thompson submitted)."</p> <p>(Mount and Saracino et al. 2013 at 71.)</p> <p>The "low certainty" attributed to this outcome is not solely due to the potential for restored sites to be colonized by invasive clams, as the Draft Plan suggests. There is simply not much evidence that restored habitats will generate a regular supply of food (on any time step) to the surrounding environment and even less evidence or indication that any measureable quantity of exported food will be transported far downstream to the areas where pelagic species (like delta smelt and longfin smelt) rear. Mount and Saracino et al. 2013 at 78. Even the reference the Draft Plan cites regarding export of food from existing shallow sub-tidal habitats makes the point that these habitats are (at best) periodically sinks for primary productivity, Lehman et al. 2010, not a surprising result as tidal marsh areas are characterized by accretion of materials.</p>	<p>not include large amounts of tidal restoration.</p>
1723	439	<p>Invasion of restored sites by invasive clams could actually change the effect of habitat restoration to a negative effect as habitats created under CM4 would then become a sink for primary productivity generated elsewhere in the Delta. Essex Partnership 2009 (DRERIP Reviews 2009). The independent peer review panel report from Mount and Saracino et al. 2013 concluded:</p> <p>"Thus, marshes may act either as net sources or sinks for plankton in the adjacent waters, depending on the availability of habitat for small fish and the degree of colonization by benthic grazers such as clams. The exact details of the exchange processes depend on the physical configuration of the marsh including permanence of inundation (Brucet et al. 2005), residence time of the water (Lucas and Thompson 2012), and the biological composition, i.e., the kinds and abundance of producers and consumers within the marsh including transient organisms (Kneib 1997)."</p> <p>(Mount and Saracino et al. 2013 at 71; see also Lucas and Thompson 2012.)</p> <p>Indeed, an accurate reporting of uncertainty regarding the food web effect of CM4 for delta smelt would be that there is "low" certainty of any positive effect at all, "moderate certainty" of no effect (especially for ROAs (Restoration Opportunity Areas) that are not immediately adjacent to delta smelt and longfin smelt habitat), and, a "moderate-high" certainty of negative effects to delta smelt if the restored habitats become colonized by invasive clams or invasive delta smelt predators. BDCP's DRERIP reviews made exactly these points in their ratings of most tidal marsh ROA's. Essex Partnership 2009 at 9 and appendices.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative. Please see Master Response 5 regarding BDCP Conservation Measures.</p> <p>Conservation measures intended to address known stressors were developed over several years in association with resource agencies and stakeholders; the background on the process is provided in Appendix 3.A of the public draft BDCP. The effects analysis acknowledges the uncertainty in food production increases from BDCP's proposed CM4, because of factors such as invasive clams.</p>
1723	440	<p>Any benefits from shallow water habitat restoration could not arise until the habitat restoration occurred, and potentially many years after active restoration ceased. In most cases, the planned restoration will not occur for several decades, meaning there cannot possibly be a food benefit to the covered species for many of these species' generations. In addition, the Draft Plan's assertion of benefits to delta smelt from habitat restoration</p>	<p>Please see the response to comment 1723-431 regarding BDCP Conservation Measures.</p>

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		<p>incorrectly assumes that no habitat restoration occurs under the environmental baseline. In fact, as we have discussed elsewhere, restoration of 8,000 acres of tidal marsh and shallow sub-tidal habitat is already called for in the U.S. Fish and Wildlife Service 2008 Biological Opinion, and under the National Marine Fisheries Service 2009 Biological Opinion a much larger expanse of floodplain habitat is targeted for restoration, at an earlier date, than what is expected under the Draft Plan. Thus the DEIR/DEIS improperly credits to the BDCP all of its expected benefits to delta smelt from tidal marsh restoration and Yolo Bypass floodplain restoration because of the flawed baseline used for comparison.</p>	
1723	441	<p>The Draft Plan and DEIS/DEIR fail to use the best available science to analyze environmental effects on the effects of Fall X2, and the documents understate the likely negative impacts to [delta smelt].</p> <p>The DEIS/DEIR and Draft Plan fail adequately analyze the effect of fall Delta outflows on delta smelt abundance and productivity. First, the documents fail to discuss the results of scientific studies on the higher fall outflow provided in 2011, when delta smelt abundance increased by a factor of approximately 10, consistent with the predicted outcomes in the adaptive management plan for Fall X2. The California Department of Fish and Game in 2011 stated that, "delta smelt abundance in 2011 is greater than it has been since 2001 but remains a small fraction of historical abundance, state biologists say. The improvement is likely due in large part to higher than usual Delta outflow which resulted in more and better habitat." California Department of Fish and Wildlife, press release, Endangered Delta Smelt Population Improves, December 22, 2011, available online at: http://cdfgnews.wordpress.com/2011/12/22/endangered-delta-smelt-population-improves-2/.</p> <p>Increased Delta outflow in the fall of 2011 appeared to result in higher growth rates, reduced effects of invasive clams on productivity and prey abundance, and increased food production. See, e.g., Brown et al. 2012; Thompson et al. 2012; Teh 2012; Baxter and Slater 2012. The DEIS/DEIR and Draft Plan likewise make no reference to the MAST report or other Fall X2 studies conducted in 2011 and recent years. See Baxter et al. 2013. The documents need to be revised to incorporate this existing scientific information.</p> <p>Second, the documents fail to use existing statistical methods to quantify and analyze the effects of fall outflow on delta smelt abundance. Kimmerer, as part of an independent peer review of BDCP, developed an alternative model that analyzed the effects of fall outflow on subsequent summer abundance as measured by the towntnet survey. Mount and Saracino et al. 2013 at 64-66, 68. That peer review concludes that the model "was appropriate for the data," and found that "the predicted ratio of towntnet index for LOS:NAA (low outflow scenario-No Action Alternative) was about the same as that for HOS:NAA (high outflow scenario-No Action Alternative) about half the time, and the other half of the time it was much lower, with large confidence intervals related to the uncertainty in the prediction from the model." Id. At 65. The peer review concludes that "projections under LOS showed about half the time a marked reduction in predicted summer abundance index compared to NAA." Id. At 68. [Footnote 81: However, as noted above, this review also identified significant modeling flaws with outflow in the fall months that may affect these results.] The Draft Plan and DEIS/DEIR need to be revised to use this existing model to asses effects of fall outflow on delta smelt.</p>	<p>The methods used to assess the potential effects of fall outflow on delta smelt were developed in association with the fish agencies permitting the BDCP. Studies specific to the effect of 2011 outflows (i.e., the FLASH report by Brown et al. 2014; the MAST report by IEP MAST in 2015) were released after the release of the draft BDCP and DEIR/S. The BDCP and EIR/S employed the abiotic habitat index method of Feyrer et al. (2011), which would be expected to give similar results to other methods such as those of Mount et al. (2013) in terms of illustrating differences in fall habitat conditions. The potential to use the Mount et al. (2013) model was discussed as part of the preparation of the California WaterFix BA, but the fish agencies did not feel that its use was necessary in addition to the use of the method based on Feyrer et al. (2011). Note that the preferred alternative, Alternative 4A (California WaterFix), includes the fall X2 criteria from the USFWS (2008) BiOp, and therefore gives similar fall abiotic habitat conditions as the no action alternative.</p>
1723	442	<p>The conservation strategies in Chapter 3 for protection and restoration of natural</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred</p>

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		<p>communities are uncertain and are based on unsupported assumptions.</p> <p>The Plan assumes that restoration of various natural communities and habitat types will provide sufficient benefits for covered natural communities, plants and wildlife. However, as the Delta Independent Science Board [(ISB)] pointed out in detail in their assessment of the BDCP, Chapter 3 suffers from a lack of underlying reasoning and evidence to support the conclusion that conservation acreage or restoration goals will provide the contemplated benefits to covered species. See Delta ISB 2014. In particular, the Delta ISB commented that the BDCP relies on an assumption that restoration will adequately address the impacts from the project. However, that conclusion is premised on the assumption that restoration would occur in a time-frame relevant to address the impacts. Such a conclusion is flawed as restoration of most habitat types may take years or decades to achieve the level of what had been functioning habitat before it was destroyed or degraded by BDCP activities. Id. At B-51. In addition, the BDCP is also based on the assumption that restoration will always be effective and would provide habitat equal or better than the habitat lost. However, such a conclusion is fraught with uncertainties, none of which were acknowledged or addressed in the Plan. Id. At B-52. Finally, the extensive use of habitat suitability models, which rely on assumptions about where habitat may or may not be located, results in uncertainty about the location of species and the value of habitat. Id. At 50. The Delta ISB recommended that the BDCP incorporate extensive monitoring in order to ensure that the extensive uncertainties are addressed. Id.</p>	<p>alternative.</p> <p>For responses to comments related to the Delta Independent Science Board's letters, please refer to comment letters BDCP 1448 and/or RECIRC 2546. Please see Master Response 5 regarding BDCP Conservation Measures.</p> <p>Although Alternatives 4A, 2D, and 5A include only those habitat restoration measures needed to provide mitigation for specific regulatory compliance purposes, habitat restoration is still recognized as a critical component of the state's long-term plans for the Delta. Such larger endeavors, however, will likely be implemented over time under actions separate and apart from these alternatives. The primary parallel habitat restoration program is called California EcoRestore (EcoRestore), which will be overseen by the California Resources Agency and implemented under the California Water Action Plan. Under EcoRestore, the state will pursue restoration of more than 30,000 acres of fish and wildlife habitat by 2020. These habitat restoration actions will be implemented faster and more reliably by separating them from the water conveyance facility implementation.</p>
1723	443	<p>The conservation strategy relying on cultivated lands is confusing and lacks clarity.</p> <p>The BDCP proposes to conserve 48,625 acres of cultivated land for the benefit of wildlife. Draft Plan at 3.4-76 to -88. However, the acreage numbers of cultivated lands do not appear consistent. For example, of the 48,625 acres of cultivated land, the BDCP requires 43,325 acres of cultivated lands for Swainson hawk, leaving 5300 acres for crops that are not of moderate or high value for hawks. However, this acreage breakdown does not fit with the cultivated lands requirement for Sandhill crane, which requires 7300 acres of cultivated land for foraging, of which 5840 must be of high quality (i.e., rice or corn). Since moderate or high value crops for Swainson hawk cannot be rice or corn, the remaining 5300 acres of cropland not needed for Swainson's hawk does not match with the 5840 acres of high value crop needed for cranes. In addition, the Plan fails to provide any details regarding the management of cultivated lands after harvest. For many species, how cultivated lands are managed after harvest is critical for those species. For example, Sandhill crane require specific timing and flooding of fields after harvest. In addition, tillage practices can leave fields either providing food for wildlife or providing no value to wildlife. The final Plan must include specific details about treatment of after-harvest lands.</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>The BDCP proposed conservation measures for many species. Fulfilling those measures for one species would not relieve the obligation to do so for other species as well. The FEIR/FEIS describes proposed measures related to protection and management of cultivated lands for wildlife species, in particular for Swainson's hawk and sandhill cranes. Please also see Master Response 17.</p>
1723	444	<p>The Plan fails to assess the direct and indirect impacts to wildlife refuges.</p> <p>As discussed supra in section I(h), the DEIR/DEIS failed to include level 4 water supply as part of the baseline conditions, which is a significant oversight by the state and federal agencies as level 4 water supply for wildlife refuges is required under the CVPIA (Central Valley Project Improvement Act). The Central Valley Joint Venture (CVJV) partners specifically requested that the BDCP assess impacts to refuge water supply and "adopt a goal to contribute to the attainment of the acreage, water, and bird population goals set forth by the CVJV Implementation Plan." Central Valley Joint Venture Letter to BDCP (May 24, 2013). Similarly, it is not clear that the Draft Plan included Level 4 water deliveries. See supra, section I(d). As a result, the DEIR/DEIS fails to adequately assess the direct and</p>	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see response to comment 1723-61 regarding Level 4 water supplies.</p>

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		indirect impacts from BDCP operations on state and federal wildlife refuges. The BDCP must take into account the effects of water operations on the timing and quantity of water deliveries to refuges across water years. Those impacts must be assessed and fully mitigated consistent with the requirements of the CVPIA.	
1723	445	Tricolored blackbird population numbers have crashed in the last few years, resulting in Department of Fish and Wildlife proposing to emergency list the blackbird under CESA. See Fish and Game Commission Agenda Item 11, "Possible Adoption of Emergency Regulations to add the Tricolored Blackbird (<i>Agelaius tricolor</i>) to the list of Endangered Species (pursuant to Section 2076.5, Fish and Game Code)," available online at http://www.fgc.gov/meetings/2014/aug/080614agd.pdf (incorporated by reference). Given the dire condition of Tricolored blackbirds and the likely imminent listing under CESA, the BDCP must include a robust conservation strategy for this species. Unfortunately, the Plan provides a mere 50 acres and no restoration within the Plan area. This does not meet the NCCP's conservation standard.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 12 of the EIR/EIS addresses effects on tricolored blackbird. Tricolored blackbird is also being addressed in an incidental take permit being sought from CDFW.</p>
1723	446	The BDCP will have a significant impact on Sandhill crane due to the decision to site the tunnel alignment and other associated structures in crane habitat. As noted above, there are substantial concerns about the temporal mismatch between habitat lost and conservation lands protected or restored. This concern applies to the conservation strategy for cranes. Further, there are serious concerns that the siting of powerlines through and near crane habitat will result in a serious impact to cranes. It is appears that the scientific information associated with powerline impact analysis and the minimization of those impacts is outdated. The analysis of the risk to birds from powerlines did not include a 2012 report from the Avian Powerline Interaction Committee (APLIC), "Reducing Avian Collisions with Powerlines: The State of the Art in 2012," Edison Electric Institute and APLIC. Washington, DC, available online at: http://www.aplic.org/uploads/files/11218/Reducing_Avian_Collisions_2012watermarkLR.pdf (incorporated by reference).	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please refer to Master Response 17, which addresses effects on Greater Sandhill Crane and effects on Staten Island. AMM20 in Appendix 3B of the EIR/EIS specifically addresses the siting of powerlines in crane habitat.</p>
1723	447	The conservation strategy for Giant garter snake appears to be little more than 1:1 mitigation for habitat acres lost, which falls well short of the NCCP conservation standard. Conservation Measure 1 as well as impacts from the conversion of land in the Yolo Bypass will result in the loss of 6,538 acres of Giant garter snake habitat in key areas for garter snake. Draft Plan at 3.3-30 to -31. There is no explanation how a 1:1 mitigation ratio for a critically endangered species with only 13 populations left in California meets the NCCP requirement that the plan "provide for the conservation" of the species in the Plan Area. The conservation strategy for Giant garter snake must be revised to include substantially more habitat for snakes within the Plan Area.	<p>Please see Master Response 5 regarding BDCP Conservation Measures.</p> <p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Chapter 12 of the EIR/EIS addresses effects on giant garter snake. Giant garter snake is also being addressed in a Biological Opinion and an incidental take permit being sought from the USFWS and CDFW, respectively.</p>
1723	448	The conservation strategy for California red-legged frog and California tiger salamander includes a directive to protect stock ponds on conserved grasslands. Draft Plan at 3.3-31. While such a conservation requirement is important, additional detail should be required, including a requirement that funding shall be directed towards stock pond improvement and maintenance in perpetuity as part of the management of the grasslands. Stock ponds are frequently in need of repair and require on-going management (e.g., cleaning and tulle control) in order to remain of value to these listed species.	<p>Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred alternative.</p> <p>Please see Master Response 5 regarding BDCP Conservation Measures.</p> <p>Chapter 12 of the EIR/EIS addresses effects on California red-legged frog and California tiger salamander. California red-legged frog and California tiger salamander are also being addressed in a Biological Opinion being sought from the USFWS. California tiger salamander is also being addressed in an incidental take permit being sought from CDFW.</p>
1723	449	The conservation objectives for Valley elderberry longhorn beetle (VELB) lacks any specific	Please see response to comment 1723-1 regarding the BDCP (Alternative 4) no longer being the preferred

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		conservation acreage number. Draft Plan at 3.3-32. It is impossible to tell how much acreage is required in this plan to address VELB impacts and to provide for the conservation of VELB in the plan area. The conservation objective must be revised to be quantifiable.	alternative. See Master Response 5 regarding Conservation Measures. Analysis and mitigation for impacts Valley Elderberry longhorn beetle are presented in Impacts BIO-35 through BIO-37, Chapter 12, of this Final EIR/EIS.
1724	1	The proposed BDCP is truly monumental in its vision -California and the United States are to be commended for taking this project forward for consideration.	Although a viable alternative, please note that the BDCP (EIR/EIS Alternative 4) is no longer the preferred alternative. Alternative 4A, also known as California WaterFix, has been developed in response to public and agency input and is the new CEQA Preferred Alternative. Alternative 4A is also the NEPA Preferred Alternative, a designation that was not attached to any of the alternatives presented in the 2013 Public Draft EIR/EIS. Alternative 4 remains a potentially viable alternative and is being carried forward in this RDEIR/SDEIS because it represents the original habitat conservation plan/natural community conservation plan (HCP/NCCP) alternative approach, and because it provides an important reference point from which the Alternative 4A, 2D, and 5A descriptions and analyses were developed. If the Lead Agencies ultimately choose the alternative implementation strategy and select an alternative presented in the RDEIR/SDEIS after completing the CEQA and NEPA processes, elements of the conservation plan contained in the alternatives in the 2013 Public Draft EIR/EIS may be utilized by other programs for implementation of the long term conservation efforts. Unlike the BDCP, Alternative 4A would not serve as a HCP/NCCP under ESA Section 10 and the NCCPA, but rather would achieve incidental take authorization under ESA Section 7 and CESA Section 2081(b). See RDEIR/SDEIS, Section 4, New Alternatives: Alternatives 4A, 2D, and 5A, and Master Responses 4 (Alternatives) and 5 (BDCP) for additional information.
1724	2	San Diego currently imports approximately 85 percent of its water supplies from the Colorado River and State Water Project (SWP). As the largest member agency of the San Diego County Water Authority (Water Authority), San Diego is paying approximately 40 percent of the cost to bring online 50,000 acre- feet per year of desalinated seawater by 2015. Additionally, San Diego is moving forward with plans to purify its recycled water for potable purposes. By 2035, over a third of San Diego's future drinking water demands are anticipated to be met with locally produced purified water.	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS and is consistent with information described in Chapter 2, Proposed Objectives and Purpose and Need, and Section 1.C.3 of Appendix 1C, Water Demand Management, of the Final EIR/EIS.
1724	3	The San Diego region is doing everything it can to diversify and fortify our collective water supply portfolio while minimizing imported water deliveries from the SWP. We have recently seen the cost of purchasing imported water double every ten years. Water affordability in the urban area's disadvantaged community (DAC) is an issue with which we struggle. A disadvantaged household in San Diego is already paying approximately \$2,000 an acre-foot for their water. The proposed cost of the BDCP would further increase water rates by 20 percent or more, leading to even greater affordability issues for our ratepayers	See response to comment 1724-1. Socioeconomic effects of the various alternatives are described and assessed in Chapter 16, Socioeconomics, of the Final EIR/EIS. Please refer to Master Response 5 regarding funding and Master Response 27 regarding environmental justice.
1724	4	San Diego supports the co-equal goals of an enhanced Delta ecosystem and enhanced water export reliability. With the resolution of the following general concerns and support for firm commitments by the SWP individual contractors, we are prepared to support the advancement of the Bay Delta Conservation Plan. From our perspective, the greatest risk to cost increases is the potential rolling off of anticipated project partners due to the project's expense, leaving San Diego with a disproportionate share of the cost as compared to that which is envisioned at this time. Project partners need to demonstrate a firm commitment upfront before the project is authorized.	See response to comment 1724-1. Socioeconomic effects of the various alternatives are described and assessed in Chapter 16, Socioeconomics, of the Final EIR/EIS. A Draft BDCP Statewide Economic Impact Report has also been published, which indicates that the BDCP would result in a substantial economic net benefit to the State. For information on funding and costs, see BDCP Chapter 8, cost- benefit analysis on the BDCP website. Master Response 5 also discusses the Implementing Agreement and the proposed Governance Structure and Implementation for the BDCP.
1724	5	Financial Aspects. Chapter 8 lacks sufficient detailed information to allow individual agencies to perform their own cost-benefit analysis. With this information, individual SWP	See response to comment 1724-1. The preferred alternative, Alternative 4A, no longer includes an HCP/NCPP under ESA Section 10 and the NCCPA, but rather would achieve incidental take authorization

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		contracting agencies should be able to make firm decisions as to whether or not they wish to commit to taking the water made available by the BDCP. With that commitment, the SWP contractors will be better able to move forward with their negotiations related to how to assure continued payment for BDCP conveyance projects. The final BDCP should detail "step-up" provisions if individual water contracts default on their funding obligations. Accompanying those provisions should be a legal analysis of the viability of relying on the State's general fund as security for project debt. San Diego's clear concern is that its ratepayers will be left paying a disproportionate share of the conveyance projects if abandoned by other agencies due to its initial expense .	under ESA Section 7 and CESA Section 2081(b). See RDEIR/SDEIS, Section 4, New Alternatives: Alternatives 4A, 2D, and 5A, and Master Responses 4 (Alternatives) and 5 (BDCP) for additional information on project costs and funding. An updated cost-benefit analysis will be prepared outside of the CEQA/NEPA process.
1724	6	Draft Implementing Agreement. The draft Implementing Agreement, dated May 30, 2014, is intended to establish how the various federal, State, and certain SWP contractors (Authorized Entities) will work together cooperatively towards achieving the BDCP's various financial and implementation obligations . Our review of the draft Implementing Agreement finds insufficient clarity with regard to how these legally binding obligations will be made and the timeframe in which they will be made. The final Implementation Agreement should establish the specific commitments of individual SWP or Central Valley Water contractors participating in the BDCP. Also, the draft Implementing Agreement needs to better outline how federal and State funding will be assured over the entire implementation schedule of the BDCP.	<p>The Draft Implementing Agreement for the proposed project was made available for public review on May 30, 2014 and the public review period was extended by 46 days until July 29, 2014, in order to accommodate a 60-day review period consistent with the California Natural Community Conservation Planning Act.</p> <p>As described in the May 5 2014 posting to the BDCP website, the delayed publication of the draft Implementing Agreement was related to availability of key individuals whose drought response duties required significant time commitments, resulting in delays in finalizing the draft Implementing Agreement.</p> <p>Implementing agreements are a requirement under the NCCPA, and are routinely executed under the ESA Section 10 (HCP) permitting process. Since the current proposed project (Alternative 4A) is no longer a NCCP or HCP, an implementing agreement was not released with the RDEIR/SDEIS or final EIR for the project. .See also Master Response 5 for further discussion of the IA and BDCP.</p>
1724	7	The member agencies of the Water Authority, including the City of San Diego, have a very large collective stake in the success of the BDCP. As such, we believe that the Water Authority should be allowed a seat of its own in the various planning and negotiation efforts at which the Metropolitan Water District of Southern California (MWD) is currently representing our interests. We support the work of MWD to advance the BDCP and we also support the work of the Water Authority to thoroughly vet the complex array of engineering and financial decisions presented in the draft BDCP, Implementing Agreement , and all future documents governing the advancement of this project.	The issue raised by the commenter addresses the merits of the project and does not raise any issues with the environmental analysis provided in the EIR/EIS.
1725	1	The Yurok Tribe supports the goal of restoration of the Bay Delta ecosystem and its endangered and threatened species. We recognize the likelihood of increased future water demand and increased uncertainty in water reliability due to impending climate change and population growth in California. We encourage the development of a scientifically based restoration plan that fully recognizes the Yurok Tribe's reserved fishing and water rights on the Klamath and Trinity Rivers, and respects and honors the federal trust relationship between the United States and the Yurok Tribe. We do not support the Draft BDCP as proposed and believe that the Draft EIR/EIS is insufficient, both from a procedural and technical perspective, and fails to fully analyze impacts to the Klamath and Trinity Rivers and their fishery resources that are of utmost importance to the Yurok Tribe and its members.	<p>The EIR/EIS presents a comparison of conditions under Alternatives 1 through 9 as compared to the No Action Alternative to determine the effects of the alternatives by teasing out climate change and sea level rise effects. If the sea level rise assumptions were changed, the same assumptions would be included in the alternatives and the No Action Alternative. Therefore, the differences between the alternatives and the No Action Alternative would be similar under any sea level rise scenario.</p> <p>During design of the conveyance facilities, an analysis would be completed with updated sea level rise projections for the life cycle of the facilities. As described in Final EIR/EIS Section 3.6.1.1 of Chapter 3, Description of Alternatives, facilities to be constructed along the levees would be designed to provide flood neutrality and to provide continued flood management at the same level of flood protection as the existing levees; or if applicable, to a higher standard for flood management engineering and permitting requirements if the standards are greater than the existing levee design during construction and operations. Therefore, the facilities would need to withstand the design flood event established by the Federal government.</p> <p>Alternative 4A, also known as California WaterFix, has been developed in response to public and agency input and is the new CEQA Preferred Alternative. Alternative 4A is also the NEPA Preferred Alternative, a designation that was not attached to any of the alternatives presented in the 2013 Public Draft EIR/EIS. Alternative 4 remains a potentially viable alternative and is being carried forward in this RDEIR/SDEIS because it represents the original habitat conservation plan/natural community conservation plan (HCP/NCCP) alternative approach, and because it provides an important reference point from which the</p>

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			<p>Alternative 4A, 2D, and 5A descriptions and analyses were developed. If the Lead Agencies ultimately choose the alternative implementation strategy and select an alternative presented in the RDEIR/SDEIS after completing the CEQA and NEPA processes, elements of the conservation plan contained in the alternatives in the 2013 Public Draft EIR/EIS may be utilized by other programs for implementation of the long term conservation efforts.</p> <p>The preferred alternative, Alternative 4A, does not include substantial tidal restoration, although other alternatives evaluated do. As described in Chapter 3, Description of Alternatives, wetlands restoration is only considered in a programmatic manner in the EIR/EIS. Therefore, project-specific locations and facilities and related impacts and benefits are not considered in the EIR/EIS. Prior to development of restoration areas, further engineering and environmental studies would need to be completed to define the locations and the configuration of restoration areas. These future studies would be required under both State and federal requirements to consider the most recent climate change and sea level rise information at that time.</p> <p>Also see Master Response 33 regarding Adaptive Management.</p>
1725	2	<p>The Yurok Tribe is located on the lower 44 miles of the Klamath River, and is the largest Tribe in California. Fisheries resources of the Klamath and Trinity Basins are an integral component of the Yurok way of life - for sustenance, ceremonial, religious, and commercial purposes. In light of the importance of the Klamath and Trinity River fishery resource to Yurok People, the Tribe has been a leader in Klamath Basin science and restoration efforts. We must be vigilant stewards of the river and the fishery it supports, to ensure that future generations of Yurok People may continue our way of life.</p>	<p>The new preferred alternative, Alternative 4A, would not affect Klamath River or associated resources and fisheries. Modeling indicates that the effects on Trinity River would be negligible. Please see the California WaterFix Biological Assessment, Chapter 5, Effects Analysis for Chinook Salmon, Central Valley Steelhead, Green Sturgeon, and Killer Whale, and associated appendices, for more information.</p>
1725	3	<p>Despite last minute attempts from the California Department of Water Resources (DWR) to outreach and consult with tribes, we are frustrated that the Yurok Tribe was not consulted and engaged early in the BDCP EIR/EIS development process and that alternatives were evaluated and eliminated prior to adequate tribal consultation efforts by the DWR as lead agency. Furthermore we are concerned that as the BDCP co-lead agency, and federal trustee of the Yurok Tribe, the Bureau of Reclamation (Reclamation) has not initiated formal government-to-government consultation with the Yurok Tribe regarding the development of the Draft BDCP and supporting Draft EIR/EIS. This failure to consult with the Tribe is a violation of Reclamation's federal trust responsibility to act in our best interests and is contrary to the protection of the Tribe's federally reserved rights and trust resources.</p>	<p>Please see Master Response 21 related to the involvement of Native American Tribes in the planning and development of the proposed project, and Master Response 5 for a discussion of the current status of the draft BDCP Effects Analysis.</p> <p>Please refer to Final EIR/EIS Section 18.1.1.4, of Chapter 18, for a discussion Reclamation's Native American correspondence and consultation.</p>
1725	4	<p>The Yurok Tribe submitted formal comments on the 5th Staff Draft of BDCP in September 2011. We did not receive a written response to our comments, which remain unaddressed in the Draft BDCP and supporting EIR/EIS. In our 2011 comments, in addition to requesting early and ongoing consultation during development of the BDCP, we expressed our concerns regarding the following insufficiencies of the 5th Staff Draft of the BDCP, concerns that remain today</p> <ul style="list-style-type: none"> - Specific language that preserves the fishery restoration flows established in the December 2000 Trinity River Mainstem Fishery Restoration Record of Decision (ROD) and recognizes and authorizes the 50,000 acre-feet of Trinity water identified in the second provision of the 1955 Act. - Full recognition and compliance with the instream flow requirements and restoration prescriptions of the Trinity River ROD. - Scientific certainty that the BDCP would not impact annual carry-over storage in Trinity 	<p>The CVP Trinity River Division facilities are operated in accordance with State Water Resources Control Board and other federal and state requirements, and the Trinity River Main-stem Fisheries Restoration Record of Decision to maintain minimum instream flows in the Trinity River; and minimum reservoir storage in Whiskeytown Lake to provide cold water releases to protect fisheries in the Sacramento River downstream of the Keswick Dam, as described in Section 5.1.2.1 of Chapter 5, Water Supply, of the Final EIR/EIS.</p> <p>The CALSIM II results indicate periods when minimum Trinity River flows and/or Trinity Lake storage cannot be met. However, these conditions may differ from real-time operations under stressed water supply conditions. Such model results occur due to the inability of the model to make real-time policy decisions under extreme circumstances or in the future when snowpack may be reduced due to climate change. The CALSIM II model makes month-by-month decisions based on values for that month only. These reductions would be lessened in real-time by making decisions in prior months as well as the current month to manage the actual available water supplies within legal and contractual obligations.</p> <p>The CALSIM II model analyses were conducted to evaluate changed conditions under the alternatives as compared to the Existing Conditions and the No Action Alternative for the long-term. Therefore, the model</p>

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		<p>Reservoir and cold-water pool availability and thus jeopardize compliance with Trinity River water temperature objectives contained in the "Water Quality Control Plan for the North Coast Region" by the North Coast Regional Water Quality Control Board (NCRWQCB).</p> <ul style="list-style-type: none"> - Water budget analyses and water operating plans for the CVP and State Water Projects that fully account for 50,000 acre-feet of water from the Trinity River Division that is required to be managed for release on a schedule that makes it available to Humboldt County and downstream water uses for beneficial uses in the Trinity/Klamath basin, including non- consumptive instream flows for fishery purposes. - Segregation and management of the 50,000 acre-feet in a manner that does not interfere with or diminish flow releases identified in the 2000 Trinity River Record of Decision. - Requirements in the BDCP that, pursuant to section 3404(c)(2) of the Central Valley Project Improvement Act, every new, interim or renewed CVP water service or repayment contract will include provisions by which CVP water and power contractors expressly agree that the Trinity Division will provide: (a) the separate amounts and independent management and use of the Record of Decision (ROD) flow releases and the 50,000 acre-feet for the Trinity basin; and (b) pay the cost of Trinity River fishery restoration pursuant to section 3406(b)(23) of the Central Valley Project Improvement Act (CVPIA). <p>These insufficiencies remain unaddressed and/or are not incorporated into the Draft BDCP and were not included in the modeling and analysis that was used to evaluate the project alternatives in the Draft BDCP EIR/EIS. For these reasons, the CEQA/NEPA analysis is insufficient, and does not fully evaluate the impacts related to implementation of Alternative 4 in the Draft BDCP EIR/EIS.</p>	<p>did not include assumptions to respond to emergency situations, such as the recent releases into the Trinity River to improve conditions for fisheries in the lower Trinity and Klamath rivers. In 2015, Reclamation published a Notice of Intent to initiate NEPA analysis of the 50,000 acre-foot flow release; however, that analysis has not been fully defined to a level for consideration in the EIR/EIS.</p>
1725	5	<p>Trinity River in-basin flows for in-basin needs have priority over out-of-basin needs under the 1955 Act. It is clear from the legislative and administrative record that the diversion of Trinity River water is limited to water that is surplus to the needs of the Trinity River basin, which includes the amount of water necessary to meet the federal government's Tribal trust obligations to restore and protect the fishery resources of the Yurok and Hoopa Valley Tribes. Therefore, the BDCP should contain a policy stating that meeting the co-equal goals of water supply reliability and ecosystem restoration shall give priority to in-basin needs over out-of-basin diversions and not adversely impact the downstream federally reserved fishing rights and tribal trust resources of the Yurok and Hoopa Valley Tribes. Klamath and Trinity fishery resource protection includes meeting the flow requirements of the Trinity River record of decision, [Footnote 1] satisfying Trinity River temperature objectives contained in the "Water Quality Control Plan for the North Coast Region" [Footnote 2] by the North Coast Regional Water Quality Control Board, and ensuring adequate cold water carry-over storage for downstream fishery needs.</p> <p>[Footnote 1: See http://www.trrp.net/?page id =72, accessed 9/11/11.]</p> <p>[Footnote 2: See "Water Quality Control Plan for the North Coast Region" Table 3-1, page 3-8.00, footnote 5, located at http://www.waterboards.ca.gov/northcoast/water issues/programs/basin plan/083 105-bp/04 water quality objectives.pdf, accessed 9/11/11.]</p>	<p>As described in Section 5.1.2.1 of Chapter 5, Water Supply, of the Final EIR/EIS, the CALSIM II model prioritizes delivery of water to the Trinity River in accordance with the Trinity River Main-stem Fisheries Restoration Record of Decision. The basis of the Trinity River criteria included in the CALSIM II model are presented in the 2008 Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project, prepared by Reclamation and incorporated by references into Chapter 5.</p>
1725	6	<p>In its current form, the BDCP will fail to achieve its purpose of restoring the Delta ecosystem. The conservation and mitigation measures promoted by the BDCP are unlikely</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. A modified proposed project (Alternative 4A/California WaterFix) is being considered,</p>

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		to succeed, and will result in further degradation of Endangered Species Act (ESA) listed Sacramento River winter-run Chinook salmon, delta smelt and other ESA covered fish species. For example the BDCP modeling results reveal substantial decreases in smolt survival rate as a result of Alternative 4 implementation.	as described in the Final EIR/EIS. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), a response is provided generally referring the commenter to relevant information.
1725	7	The Yurok Tribe is especially concerned about BDCP impacts to Trinity River water quality and temperature compliance targets established by the North Coast Regional Water Quality Control Board for threatened Southern Oregon/Northern California Coast coho salmon and Spring-run Chinook populations. Water quality impacts of the BDCP and its alternatives on surface water quality in the Trinity River are inadequate, did not consider or evaluate operational/infrastructure changes to Lewiston Reservoir for improved water temperature control measures, and did not contain models or analyses that incorporated the 50,000 acre-feet of Trinity water identified in the second provision of the 1955 Act for Humboldt County and downstream users.	Please see Response to Comment 1725-2 and 1725-6.
1725	8	The Draft BDCP EIR/EIS did not fully evaluate the cumulative impacts of climate change on Trinity Reservoir cold-water pool and end-of-September carry-over storage levels as a result of the BDCP. California is in a third year of drought and forecasted end-of-September (EOS) water volumes for Trinity Reservoir will be insufficient to provide for Trinity Record of Decision flows if a multi-year drought continues such as occurred in 1928-1934. Even without the BDCP and its increased capacity for South of Delta water transfers, the potential to exceed Trinity River temperature standards during critically dry years is high, and may impede recovery of Trinity River endangered species act-listed coho salmon populations. Current Central Valley Operations forecasts are dire, and predict EOS carry-over storage in Trinity Reservoir to be 654,000 acre-feet under current operations. This is less than the 750,000 acre-feet identified as "problematic" in the Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis -Technical Service Center Technical Memorandum No. 86-68220-12-06, and close to the reconsultation threshold of 600,000 acre-feet minimum end of September carry-over storage identified in the National Marine Fisheries Service 2000 Biological Opinion. The draft BDCP does nothing to reduce the risk; in fact it threatens to increase it, due to increased ability to conduct water transfers from North to South of Delta during drier years. The failure to analyze this risk or consider this variable in the Draft BDCP EIR/EIS demonstrates again the inadequacy of the environmental review under NEPA and CEQA.	<p>The Final EIR/EIS analyzes all alternatives, including the new preferred alternative, Alternative 4A.</p> <p>The effects of climate change and sea level rise are presented in the Draft EIR/EIS through the comparison of the No Action Alternative and Alternatives 1 through 9 (which include climate change assumptions) as compared to the Existing Conditions (which does not include climate change assumptions). Changes in Trinity Lake reservoir storage and Trinity River flows due to climate change are presented in Appendix 5A, Section C, Modeling Results, for the comparison of conditions under the No Action Alternative as compared to the Existing Conditions. Changes in temperature due to climate change in the Trinity River below Lewiston Dam, at Douglas City, and below North Fork for comparison of the Existing Conditions, No Action Alternative, and Action Alternatives are presented in Tables 11.D.1.6 through 11.D.1.8 in Appendix 11D, Sacramento River Water Quality Model and Reclamation Temperature Model Results Utilized in Fish Analysis. In Section 11.3.4.2 of Chapter 11, Fish and Aquatic Resources, the effects of flow changes and temperature changes are considered for comparison of the Existing Conditions, No Action Alternative, and Action Alternatives.</p> <p>The Draft EIR/EIS analyzes the differences between the Action Alternatives and the Existing Conditions to determine if the impacts are adverse and significant. If that is the case, mitigation measures are presented in the EIR/EIS under CEQA.</p> <p>NEPA does not require lead agencies to mitigate impacts. Therefore, the Draft EIR/EIS identifies the changes that would occur between the Action Alternatives and the No Action Alternative without specific mitigation measures. NEPA also does not require lead agencies to identify mitigation associated with the comparison of the No Action Alternative to the Existing Conditions; therefore, no mitigation measures are identified for implementation of the No Action Alternative.</p> <p>The Action Alternatives do not address changes in Trinity River operations because these changes would not have addressed any of the provisions of the Project Objectives or Purpose and Need, as described in Chapter 2 of the Draft EIR/EIS. See also Master Response 3 regarding the Purpose and Need.</p>

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1725	9	<p>The BDCP fails to consider an adequate range of alternatives to new conveyance as required by NEPA and CEQA. The listed alternatives are simply variations on tunnel export capacities, North Delta intake locations, tunnel routes, and operational rules. Alternatives that reduce exports from historical levels have been ignored and eliminated despite support from numerous water organizations throughout California, and despite strong scientific evidence confirming that reduced exports and increased outflows to San Francisco Bay positively benefit Delta ecosystem restoration and fisheries recovery.</p>	<p>The alternatives included in the Draft EIR/EIS represent a legally adequate reasonable range of alternatives and the scope of the analysis of alternatives fully complies with both CEQA and NEPA. The Lead Agencies carefully considered all potential alternatives that were proposed during the scoping process and during time of preparation of the Draft EIR/EIS. In response to public input, several new alternatives were studied in the RDEIR/SDEIS and a new Preferred Alternative (4A) was identified.</p> <p>Fifteen alternatives and 3 new subalternatives were analyzed in the Draft EIR/EIS and the RDEIR/SDEIS, respectively. Four major alignments have been included in the EIR/EIS: Through-Delta, East of the Sacramento River, West of the Sacramento River, and a Tunnel under the Delta. Many additional proposals by public and private individuals and organizations have also been evaluated and described in Chapter 3 of the Final EIR/EIS and Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1.</p> <p>Regarding development of alternatives for the EIR/EIS, a description of the process the Lead Agencies followed to develop and screen alternatives is provided in Master Response 4.</p>
1725	10	<p>The Yurok Tribe is especially concerned that the implementation of the BDCP will result in an enlarged and inflated market for water transfers, which was not fully evaluated and modeled in the Draft EIR/EIS. The EIR/EIS included selective modeling of only the contractual water volumes and did not include the non-contractual amounts transferred via the water market in drier years. It is clear that south of Delta exports will not only increase in wetter years, but increase in drier years as the water market grows and the capacity to transfer water around the Delta increases.</p> <p>The Yurok Tribe strongly supports the overall technical analysis regarding the Draft BDCP and BDCP EIR/EIS captured in the formal comment letter submitted by the Environmental Water Caucus and its supporting stakeholder groups and tribes.</p>	<p>The proposed project aims to stabilize water supplies, and exports could only increase under certain circumstances in which hydrological conditions result in availability of sufficient water and ecological objectives are fully satisfied. It is projected that water deliveries from the federal and state water projects under the proposed project would be about the same as the average annual amount of water that would be diverted under the No Action Alternative (i.e., 2025 conditions without the proposed project). It is projected that Delta exports from the federal and state water projects would either remain similar or increase in wetter years and decrease in drier years under Alternative 4A as compared to exports under No Action Alternative (ELT) depending on the capability to divert water at the north Delta intakes during winter and spring months. The estimated changes in deliveries for Alternative 4A are provided in Chapter 5 Water Supply of the Final EIR/EIS. Although exports under the proposed project would be similar to the amount of water exported in recent history, it would make the deliveries more predictable and reliable, while reducing other stressors on the ecological functions of the Delta.</p>
1725	11	<p>The Yurok Tribe is concerned that as currently scoped and evaluated, the BDCP is seriously flawed, does not fully recognize and account for Trinity River record of decision flows, does not recognize and account for the 50,000 acre-feet of water identified in the 1955 Act for Humboldt County and downstream users, threatens recovery of Trinity River Endangered Species Act-listed coho salmon, fails to adequately address climate change impacts to Trinity Reservoir cold-water pool, and violates the federal trust responsibility of the Bureau of Reclamation to the Yurok Tribe. Given these concerns and the failure of the lead agency DWR and the federal government to adequately consult with the Tribe during the development of the document, the current Draft BDCP and preferred alternative are inadequate and a new preferred alternative should be developed that addresses these insufficiencies.</p>	<p>The CALSIM II model that was used to analyze surface water conditions in the Draft EIR/EIS includes the Trinity River Record of Decision assumptions in the Existing Conditions, No Action Alternative, and Alternatives 1 through 9 model simulations. The model prioritizes these requirements as compared to providing water to the CVP operations in the Central Valley. However, due to climate change that results in less snow and more rainfall, Trinity Lake does not always have adequate water storage to fully meet the Trinity River Record of Decision flow requirements. The effects of climate change and sea level rise are presented in the Draft EIR/EIS through the comparison of the No Action Alternative and Alternatives 1 through 9 (which include climate change assumptions) as compared to the Existing Conditions (which does not include climate change assumptions), including changes in Trinity River flows, temperature, and effects on the fisheries.</p> <p>Long-term operational criteria for the CVP facilities in the Trinity River watershed under the No Action Alternative in response to climate change have not been developed at this time, and would be speculative to include in the No Action Alternative or Cumulative Impact Analysis. These types of changes will require separate environmental documentation. SWP and CVP reservoir operational criteria changes under Alternatives 1 through 9 related to Trinity River were not considered because these changes would not have addressed any of the provisions of the Project Objectives or Purpose and Need, as described in Chapter 2 of the Final EIR/EIS and in Master Response 3.</p> <p>Recent flow releases of up to 50,000 acre-feet into the Trinity River to improve fisheries conditions in the lower Trinity and Klamath rivers have only been conducted on an annual and interim basis. In 2015, Reclamation published a Notice of Intent to initiate NEPA analysis of the 50,000 acre-foot flow release;</p>

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			however, that analysis has not been fully developed to a level for consideration in the Draft EIR/EIS. Therefore, this type of flow release is not included in the Final EIR/EIS.
1726	1	South Yuba Water District supports the comment letter dated 7/28/2014, submitted on behalf of the North State Water Alliance [BDCP 1597], which contains comments on the Bay Delta Conservation Plan, and its associated Implementation Agreement and draft Environmental Impact Statement and Environmental Impact Report. By and through this letter, South Yuba Water District adopts each comment and objection in the 7/28/2014 letter as its own, along with all exhibits and attachments to that letter, and incorporates herein by this reference all such comments, objections, and documents	Please see the responses to BDCP 1597.
1727	1	<p>As developed, the Project purposes, needs, and objectives show clearly two general projects which have been hammered together for public acceptance: conservation and reliability. Conservation has been addressed by others and generally the levels of conservation projects do not compensate the natural environment for the stresses and impacts endured during the last fifty years with existing facilities nor the future impacts that will arise from the proposed Alternative and associated facilities and growth and their largely unassessed impacts and adverse effects, their very survival.</p> <p>Reliability is commonly defined as "assurance operations or facilities", in this case, of an annual flow of the State Water Project and continued flow through the Delta to Suisun Bay. The focus has been largely on the reliability of the Delta's operations itself along with Suisun Bay as the potential sources for backflow of estuarine and sea water into the Delta when weak, unstable levees fail in a seismic event, collapse, and draw off all freshwater from the rivers and a lot of salt water from Suisun and San Pablo Bays, >10M acft in one day (>10ft depth x >10,000 sq mi).</p>	<p>This comment letter addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For detailed responses on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HC/NCCP alternatives in the 2013 Draft EIR/EIS were potential feasible and could function as an alternative for purposes of meeting CEQA's and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis of financial feasibility), response are presented generally in Master Response 5. Where comments submitted on BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p> <p>As described in Appendix 3A, Identification of Water Conveyance Alternatives Conservation Measure 1, of the Final EIR/EIS, the action alternatives were developed in a manner to both improve consistency of SWP and CVP water supply reliability and to modify SWP and CVP water facilities operations to improve ecosystem habitat, especially for state and federally listed species. The concept of providing increased predictability is part of the Project Objectives and Purpose and Need for the project alternatives as indicated in Chapter 35, Glossary, of the Final EIR/EIS, under the definition of "water supply reliability." This term is defined as "The occurrence of water supplies of sufficient quality and certainty to enhance or sustain a diverse portfolio of economic activity and ecosystem health and maintain quality of life." The alternatives were developed to deliver SWP and CVP water in accordance with SWP and CVP contracts, with the understanding that full contract amounts would not be delivered on average for the alternatives considered in the Final EIR/EIS. Please see Master Response 3, which discusses the project purpose and need in more detail.</p>
1727	2	The proposed Alternative would in fact act as a new source of additional water, primarily to	The proposed project (Alternative 4A) aims to stabilize water supplies, and exports could only increase under certain circumstances. Water deliveries from the federal and state water projects under a fully-implemented

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		compensate for the evaporative losses	<p>Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline.</p> <p>In addition, the range of alternatives considered includes alternatives that result in reductions in SWP and CVP water deliveries south of the Delta as compared to the Existing Conditions and the No Action Alternative. The No Action Alternative and Alternatives 4H1, 4H2, 4H3, 4H4; 5; 6A, 6B, 6C; 7; 8; and 9 would result in less SWP and CVP water deliveries south of the Delta than under Existing Conditions (shown in Tables 5-5 and 5-8). Similarly, Alternatives 6A, 6B, 6C; 7; 8; and 9 would result in less SWP and CVP water deliveries south of the Delta than under the No Action Alternative (shown in Tables 5-6 and 5-9). Full contract amounts are listed in Appendix 5A, Section B, CALSIM II and DSM2 Modeling Simulations and Assumptions, in the Draft BDCP EIR/EIS. Evaporation from the Delta waterways or SWP and CVP canals would occur to a similar extent in Alternatives 1 through 9 and the No Action Alternative due to similar climate change, sea level rise, and population projections in the Delta watershed.</p>
1727	3	<p>The reasonable assumption for most projects is that they will be operate at or above to their maximum physical/operational capacity as long as the financial and service area benefits compensate for operating costs, ass the economies of scale factors would favor 10M acft capacity rather than 6M acft. Also, incremental costs for minor improvements to existing facilities to support the higher flows, especially limited to the San Joaquin Valley may be undertaken without full financial and environmental review required for the proposed Alternative.</p> <p>The Project Description and its objective, purposes, and needs do not reflect the reality that the proposed Alternative may provide short-term reliability improvements which will be overwhelmed by the growing use of the maximum feasible and induced capacity to induce growth which in turn will degrade the system reliabilities and require additional projects to maintain the initial reliability. If the tunnels were kept ready to divert, but not actually diverting flows, in the event of a significant damaging earthquake then such comments would be moot. The Project Description of the proposed Alternative does not include any meaningful conditions or mitigation to avoid reasonable expectation to operate the tunnels and make them profitable for the operating agencies and service users.</p>	<p>The proposed project (Alternative 4A) aims to stabilize water supplies, and exports could only increase under certain circumstances. Water deliveries from the federal and state water projects under a fully-implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline. The proposed project does not increase the amount of water to which DWR holds water rights or for use as allowed under its contracts. Please refer to Master Response 3 for the Purpose and Need and Master Response 28 for a discussion of the proposed project’s Operational Criteria.</p> <p>The No Action Alternative and all alternatives were evaluated with population growth projected by existing general plans as compared to the Existing Conditions. The additional population growth would increase water demands, including an increase of water demands in areas North of the Delta (primarily in El Dorado, Placer, and Sacramento counties) of 443,000 acre-feet per year of users of water rights water and CVP water supplies as compared to Existing Conditions, as described in Section 5.3.3.1 of Chapter 5, Water Supply, of the EIR/EIS.</p> <p>Section 30.1.3, Urban Land Use and Water Use by Hydrologic Region, of Chapter 30, Growth Inducement and Other Indirect Effects, of the EIR/EIS, describes long-term water demand in the hydrologic regions based on projections from the California Water Plan which includes assumptions that water conservation will be implemented by 2060 in accordance with State law.</p> <p>With regards to applicability of city and county general plans, please also see Master Response 11.</p> <p>The amount of water from the new north Delta facilities will be set by Federal regulating agencies, ESA compliance and project design, and not by the water contractors. Operations for the proposed project would still be consistent with the criteria set by the FWS (2008) and NMFS (2009) BiOps and State Water Resources Control Board Water Right Decision 1641 (D-1641), subject to adjustments made pursuant to the adaptive management process as described in the 2008 and 2009 BiOps (RDEIR/SDEIS Executive Summary ES.2.2). In addition to permitting constraints on daily operations of the SWP and CVP, DWR must maintain proper performance and bypass flows across fish screens when endangered and threatened fish species are present within the north Delta facilities area. The intake fish screens drive the overall size of the intake structure on the riverbank, and have been numbered and sized to permit water to flow through the screens within a predetermined flow regime set by California Department of Fish and Wildlife and NMFS fish screen criteria (BDCP Appendix 5B Section 3.B.3.3).</p>
1727	4	The Project purposes, needs, and objectives and thereby the Project description are inadequate and incomplete and do not fully reflect the proposed Alternative, its operations,	This comment identifies a general concern that the project objectives and project description are inadequate and incomplete but does not clarify specific inadequacies or missing items. Please see response to comment

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		and probable future augmentation.	1727-3, which addresses the concern that the project operations would be expanded to divert more water and also Master Response 3, which discussed the Purpose and Need in more detail.
1727	5	<p>The proposed Alternative description (and all the others) does not fully include the various additional projects which would be supported, promoted, and developed to make fuller use of the Alternative's basic capacity currently set at 9000cfs and prospective enhanced flows, e.g., increasing flow velocities from 3.6ft/sec to 4.0ft/sec for additional flows of 2000 acft/d or 0.7M acft (=total consumption of the City of Los Angeles)</p> <p>Additional distributed pumping stations and diversion could easily provide greater flow heads, while minor changes to the SWP Delta headworks and canal augmentations could be done with categorical exemptions if done individually.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For detailed responses on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.</p> <p>Please see response to comment 1727-3, which addresses the concern that the project operations would be expanded to divert more water and also Master Response 3, which discussed the Purpose and Need in more detail. Future projects to repair or otherwise modify the existing SWP and CVP facilities in the Delta and downstream of Clifton Court gates and the Jones Pumping Plant intake channel would require separate engineering and environmental documentation.</p>
1727	6	<p>Eventually once induced and planned growths in the San Joaquin Valley and the absences of sufficient, sustainable Sacramento flows are realized, the users will request the State to implement the earlier 2010 California Drought Contingency Plan (Nov. 2010, http://www.water.ca.gov/waterconditions/docs/Final_CA_Drought_Contingency_Plan-11-18-2010a.pdf). Since the maximum capacity of the proposed Alternative includes, at 6fps, up to 15000cfs/10.9Macft (or 1.5x current SWP). The proposed Alternative depends on maintained and flat or declining agricultural development in the Sacramento Valley and eventually upon the river storage reservoirs to maintain annual tunnel flows of 6-10Macft for the proposed Alternative</p>	<p>Please see response to comment 1727-3, which summarizes the project objective and clarifies that the project would not increase the overall volume of Delta water exported nor increase water rights for DWR.</p> <p>With regards to water rights issues, please see Master Response 32.</p>
1727	7	<p>The DEIR/EIS does not explore the maximum velocities and flow capacities of the proposed Alternative and reasonably feasible, expected additions within their headworks, the Delta, and the SWP/CVP facilities in the San Joaquin Valley. Thereby the Project Descriptions and Alternatives in the DEIR/DEIS are inadequate and incomplete for compliance with both CEQA and NEPA. Furthermore, with induced growth dependency upon imported water</p>	<p>The DSM2 model results prepared for the EIR/EIS included changes in velocities in the Delta waterways. Future projects to repair or otherwise modify the Delta Cross Channel, SWP North Bay Aqueduct intake, CVP Rock Slough intake, other intakes in the Delta, and the SWP and CVP facilities downstream of Clifton Court intake weirs and the Jones Pumping Plant intake channel would require separate engineering and environmental documentation. These facilities are not considered under the Project Objectives and Purpose and Need (see Master Response 8). For more information regarding growth inducement please see Chapter 30 of the FEIR/EIS. Please see also the response to comment 1727-3, which indicates that the analysis was based on planned growth and associated water demands.</p>
1727	8	<p>Growth Inducements in the San Joaquin Valley</p> <p>Proposed Alternative flow maximization and increased southerly canal flows for the San Joaquin Valley would eventually face financial and technical barriers for transport across the Tehachapi Range as augmentation of the maximum physical lifting capacity is far more complicated and expensive compared to issues from the Delta to Tulare Basin which could not be readily concealed. However, total additional annual flows of the San Joaquin portion of the SWP could readily be diverted and absorbed by the San Joaquin users. Such use would generate huge economic benefits from more intense development of desert and drier lands and annual-to-perennial crop land conversions, as done with the original SWP, and would be sufficient to induce growth in land conversions throughout the San Joaquin Valley. These are not addressed in the relevant sections of the DEIR/DEIS, and thereby the DEIR/DEIS are inadequate and incomplete for the assessment of growth inducement from major increases in total volumes of water</p>	<p>The proposed project (Alternative 4A) aims to stabilize water supplies, and exports could only increase under certain circumstances. Water deliveries from the federal and state water projects under a fully-implemented Alternative 4A are projected to be about the same as the average annual amount diverted in the last 20 years. Although the proposed project would not increase the overall volume of Delta water exported, it would make the deliveries more predictable and reliable, while restoring an ecosystem in steep decline. The project assumes that the SWP will continue to be able to move additional water across the Tehachapi Range to meet contractor water supply needs. A discussion of project effects on agriculture is provided in chapter 14. Growth Inducement is evaluated in Chapter 30, Growth Inducement and Other Indirect Effects. The project is not expected to generate new, unplanned growth in the San Joaquin valley.</p>

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1727	9	<p>Increased Total Diverted Flows from Sacramento Valley</p> <p>As indicated elsewhere, the current shared Central Valley flows for the State Water Project can be and would be expected to be eliminated, and the SWP's flow requirements could be met by the tunnels from the Sacramento Valley. San Joaquin flows can be directed solely to the current and future irrigators' needs in the San Joaquin Valley. Although this can be recognized in various sections of the DEIR/DEIS, the overall conceptual approach is that the proposed Alternative is only a reliability project and not a flow increase project, and thereby the DEIR/DEIS is inadequate and incomplete in their addressing of the San Joaquin diversions and related leachate issues and of the expanding reliability issues and risks by the San Joaquin farming and economic spheres being tied to the availability of water for the SWP from solely the Sacramento Valley</p>	<p>Please see response to comment 1727-1, which clarifies that BDCP is no longer the preferred alternative. Please also see response to comment 1727-3, which summarizes the project objective and clarifies that the project would not increase the overall volume of Delta water exported nor increase water rights for DWR. Some other projects such as San Joaquin River Restoration Program and Upper San Joaquin River Basin Storage Investigation are considered in the Cumulative Impact Analysis in the EIR/EIS. Other programs discussed in this comment have not been developed adequately to be included in the No Action Alternative or the Cumulative Impact Analysis.</p> <p>With regards to cumulative impact analysis, please see Master Response 9. With regards to storage, please see Master Response 37.</p>
1727	10	<p>Irrigation Leachate/Return Drainage</p> <p>Although the proposed Alternative is suppose to be a reliability project, the Alternative would provide either directly or indirectly greater water volumes for irrigation which may be further considered as compensation for losses due to global warming and extended droughts in the San Joaquin Valley and adjacent Sierran watersheds. Even now San Joaquin flows have been diverted to irrigation and leaching of accumulated salts, etc. from the irrigated soils into the underlying groundwater tables and some aquifers. San Joaquin irrigators have postponed the "West Valley" Return Leachate Drain for years as the costs are large, feasibility questionable, and environmental effects severe. Unfortunately as irrigation volumes as a percentage of native stream flows have rocketed, the rivers dilution capacity has plummeted, while other irrigators have sacrificed their local groundwater and allow leachate to fill up the depress groundwater tables due to over pumping.</p>	<p>Please see response to comment 1727-3, which addresses the concern that the project operations would be expanded to divert more water and also Master Response 3, which discussed the Purpose and Need in more detail.</p> <p>Assumptions related to generation of irrigation return flows and leachate flows as related to applied surface water and groundwater on crops are identical under the Existing Conditions, No Action Alternative, and Alternatives 1 through 9 in the Final EIR/EIS.</p>
1727	11	<p>The proposed Alternative would further disconnect the San Joaquin irrigators from the consequences of continued and increased leaching of soil salts, pesticides, and fertilizers into the groundwater as long as they can get water to irrigate and leach soil contaminants.</p>	<p>The No Action Alternative and Alternatives 1 through 9 assumptions include approaches by the irrigators in the San Joaquin Valley to comply with regulatory requirements to reduce water quality effects of agricultural drainage. It is assumed in the BDCP EIR/EIS that the ongoing Grasslands Bypass project and programs to attain Total Maximum Daily Load criteria associated with agricultural drainage will be fully implemented by 2060.</p>
1727	12	<p>Public Accessibility and Distortion</p> <p>The whole character of the DEIR/DEIS does not support its use and review by the Public, the monstrous volume, separation of texts/references from illustrations, massive appendices, and widespread use of "techie talk" renders the document as totally inadequate for public review. Inclusions of both conservation and reliability elements in the same document further complicates the public review.</p> <p>Although a summary document is included, any review comments regarding the summary can be readily dismissed by a response, akin to "This is answered in the main text".</p> <p>Use of 9000 cubic feet per second (cfs) is largely unintelligible for the public who may read and desire to comment on the DEIR/EIS. Few of the public are familiar with cubic feet per sec, cu ft/sec, or cfs, while technical staff may use such numbers or even acre-feet with 43,560 cuft, the public are not and generally uses gallons. Therefore the proposed Alternatives, and others, remain largely unknown to the public. The instantaneous flow has nothing to do with the annual supply delivery (e.g., 9000cfs = 6.6M acre-feet per year (acft/yr) at 3.6fps, or say 100% capacity of the existing SWP or 10xtotal Los Angeles</p>	<p>Please see Master Response 5. It explains that the Draft EIR/EIS is the result of many years of collaboration and analysis necessary to review a project that would impact the Delta and water supplies for millions for Californians. The size and complexity of the document reflect an unprecedented effort to analyze a proposed project and 18 alternatives under both state and federal laws for special status species protection.</p> <p>In addition, Master Responses 38, Master Response 39, and Master Response 40 provide details on the lead agencies' extensive public outreach effort and the materials that were provided so that the general public could understand the proposed project and its potential impacts.</p> <p>The documentation generated by this proposed project has undergone extensive public and scientific input, discussion, and transparency, including the posting of administrative draft chapters online and providing many more opportunities for public participation than is normally required by the CEQA/NEPA processes; refer to Master Response 41(Transparency) for more information.</p>

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		<p>Department of Water and Power [LA DWP] supply).</p> <p>Use of the 9000cfs creates a false public impression of the "not very big" magnitude of the project and does not provide the public means of appreciation that it alone could supply most if not all of the total SWP supply without the San Joaquin Valley.</p>	
1727	13	<p>Faults and Seismicity</p> <p>Reliability projects for seismicity mitigation require that the proposed Alternative will in fact be largely if not totally immune from the adverse effects affecting the primary facilities. The proposed Alternative lies generally within the same area and would be affected by the same geologic/seismic and hydrologic conditions, unlike the 2010 Water Plan. Close proximity of the tunnels and expected levee ruptures requires greater efforts for isolating the proposed Alternative from similar conditions affecting the levees.</p> <p>Although smaller underground single tube transit facilities may be ideal survivors of general strong ground movement and can be very elastic in their response, their connects to anchored blocks - stations - are where most stress is focused and damages occur. Similarly the proposed larger diameter tunnels will require greater wall thicknesses and much more steel reinforcements and will create a rigid pole which will be far less flexible than the smaller (20 ft diameter) tunnels. Also like larger road tunnels and the proposed water tunnels, connections to rigid box/caisson structures will form the greatest stress during the same earthquake seismic waves. As the proposed Alternative has access shaft every five miles, every connection (two/shaft) between the shaft and tunnels would be points of stress and weakness during seismic wave passage and with so many such points, considerations must focus on the points of weakness and responses of the rigid tubes in weak soil and alluvium. Such studies and modeling has not been mentioned in the documents available.</p> <p>Similarly with two sets of tunnels and shafts the probability of damages to both occurring during the same events is multiplied and no cross-connections are provided between the two tunnel systems. However, the presence of cross-connections between shafts other than at the surface would in themselves represent additional points of failure in the proposed Alternative. Furthermore the larger the diameters the greater internal stress are created by seismic compression waves especially when different geologic layers may enclose the same tubular form and because of its larger diameter designs may include greater rigidity and perhaps bracing.</p> <p>An additional unexplored and unassessed issue is represented in this section is the seismic response of the tunnels and shafts during their construction which represents a significant impact of collapse with construction damages.</p> <p>All of these seismicity issues clearly show the inadequacy and incompleteness of the DEIR/DEIS.</p>	<p>Chapter 9 of the 2013 BDCP Draft EIR/EIS and Appendix A of the RDEIR/SDEIS describes the geology and seismicity of the study area. Based on a review of the last 20 years of precast tunnel lining seismic performance histories, it can be concluded that little or no damage to precast tunnel lining was observed for major earthquakes around the world. Based on preliminary data, it is anticipated that the Delta tunnels can be designed to withstand anticipated seismic loads. Design-level geotechnical studies would be conducted to assess site-specific hazards and appropriate mitigation measures would be implemented. Impact GEO- 1 and GEO-7 discusses the possibility of loss or damage resulting from strong seismic activity during construction and operation of water conveyance features. For more information regarding tunnel design please see the 2013 Conceptual Engineering Report.</p> <p>Please see Appendix 3E, Potential Seismic and Climate Change Risks to SWP/CVP Water Supplies, of the Public Draft EIR/EIS for discussion of potential consequences of an earthquake to exports under a No Action scenario.</p> <p>Please see Master Response 16 for more information regarding seismic impacts.</p>
1728	1	<p>Cordua Irrigation District supports the comment letter dated 7/28/2014, submitted on behalf of the North State Water Alliance [BDCP 1597], which contains comments on the Bay Delta Conservation Plan, and its associated Implementation Agreement and draft Environmental Impact Statement and Environmental Impact Report. By and through this letter, Cordua Irrigation District adopts each comment and objection in the 7/28/2014 letter as its own, along with all exhibits and attachments to that letter, and incorporates herein by this reference all such comments, objections, and documents.</p>	<p>Please see the responses to BDCP 1597.</p>

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1729	1	Part of the BDCP strategy is to largely ignore the water, ecological, and economic impacts that this strategy will have on counties of origin and upstream/downstream watershed and foothill environments	The Lead Agencies respectfully disagree with the commenter's perspective. The preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP. Its environmental evaluation can be found in Sections 4 and 5 of the RDEIR/SDEIS. The commenter is also referred to the following Master Responses for issues raised: 25 (Upstream Reservoir Effects), 5 (Conservation Measure 1 as a CM, Overview of Restoration and Enhancement Activities), 31 (Compliance with Delta Reform Act), 5 (Compliance with ESA), 4 (Tunnel Option), 28 (Operational Criteria), 32 (Water Rights Issues), 26 (Changes in Delta Exports), 34 (Beneficial Use of Water), 43 (Water Transfers), 35 (MWD Water Supply), 44 (Decision Tree), and 14 (Water Quality). For more information on funding and costs, Master Response 5. An updated cost-benefit analysis will be prepared outside of the CEQA/NEPA process. For governance issues, the commenter is referred to Master Response 5 (Governance Structure and Implementation).
1729	2	With the exception of a few shallow references to "upstream" issues, the northern counties of Shasta, Glen, Butte, Sutter, and Yuba are completely ignored in the BDCP. Therefore the total direct costs of the project ignores the costs that will be imposed on "counties of origin".	The BDCP is no longer the preferred alternative. The preferred alternative is no Alternative 4A and no longer includes an HCP. Alternative 4A has been developed in response to public and agency input. Although the BDCP is no longer the preferred alternative, the BDCP CWF EIR/EIS did include an assessment of potential changes in water supply (FEIR/EIS Chapter 5 Water Supply) which included an evaluation of storage in upstream reservoirs (i.e. Shasta, Oroville, Folsom, etc.) and potential change in river flows. The analysis also included an assessment of water deliveries to CVP and SWP contractors with the Sacramento River Hydrologic (FEIR/EIS Chapter 5 Water Supply, Appendix 5A BDCP EIR/EIS Modeling Technical Appendix, Tables C-52-6-1 and C-52-6-2. The results of this analysis concluded that water deliveries to agricultural, municipal and industrial, and refuges would be identical or nearly identical over the long-term average and during dry and critically dry period between conditions under the No Action alternative and Alternative 4A.
1729	3	The BDCP does not include the external, or indirect, costs that may be imposed on counties of origins thru the 50 year operation of the project.	Although the BDCP is no longer the preferred alternative, the BDCP CWF EIR/EIS did include an assessment of potential changes in water supply (FEIR/EIS Chapter 5 Water Supply) which included an evaluation of storage in upstream reservoirs (i.e. Shasta, Oroville, Folsom, etc.) and potential change in river flows. The analysis also included an assessment of water deliveries to CVP and SWP contractors with the Sacramento River Hydrologic (FEIR/EIS Chapter 5 Water Supply, Appendix 5A BDCP EIR/EIS Modeling Technical Appendix, Tables C-52-6-1 and C-52-6-2. The results of this analysis concluded that water deliveries to agricultural, municipal and industrial, and refuges would be identical or nearly identical over the long-term average and during dry and critically dry period between conditions under the No Action alternative and Alternative 4A.
1729	4	Recommendation: no strategy must be implemented without including the water, ecological, and economic impacts and costs, including indirect costs, in the counties of origin and upstream / downstream watersheds and foothill environments. All costs, including any external costs imposed on counties of origins, upstream / downstream watersheds, and foothill environments, must be internalized and paid for by BDCP water agencies, BDCP water users, and other beneficiaries of the BDCP.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.

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1729	5	There is little in the BDCP that will proactively lead to the recovery of threatened and endangered species in the "counties of origin" and/or counties in the Central Valley that are not in "The Project" area. While there are references to "upstream" dimensions and references to species in those areas, there is no comprehensive and detailed plan that addresses threatened and endangered species outside "The Project" area. The BDCP assumes that water and ecosystems north of the "Project Area" are virtually nonexistent and largely ignore interconnections between the "Project Area" and upstream watersheds.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5.
1729	6	Since many counties and citizens of California will not benefit from the BDCP, Water Revenue Bonds must be used as a foundation to finance this project. To use General Obligation Bonds will impose costs on counties and citizens not benefiting from this project.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.
1729	7	"The Plan" includes "biological assessment", "consultations", and will monitor effects of the operations of the Central Valley Project and State Water Project, but direct and indirect biological impacts on counties of origin and upstream watersheds are excluded.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5.
1729	8	"The Plan" must identify and then internalize these external impacts. If mitigation is not possible, then this part of the BDCP must be amended. If mitigation of economic and ecological impacts on county of origin costs are possible, all of these costs must be paid by the beneficiaries and water agencies benefiting from "The Plan."	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting

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			<p>CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	9	<p>"Take authorizations" exclude counties of origins. The BDCP is not a "comprehensive" plan. To be comprehensive the BDCP must include the entire Central Valley and associated foothill and mountain environments to be "comprehensive".</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	10	<p>Clearly the BDCP is a plan explicitly designed to exclude the counties of origins. If this is the intent of the BDCP, then the plan must include the following statements:</p> <p>The BDCP is a plan that explicitly excludes the counties of origin plus upstream watersheds, but the BDCP is responsible for any and all ecological damages and economic impacts that the BDCP causes to the counties of origin and upstream watersheds.</p> <p>The BDCP must be paid by those that benefit from the BDCP -- commercial, agricultural, urban, and all water users . Those BDCP users will also be required to pay all future ecological and economic damages incurred in the counties of origin and upstream watersheds due to the BDCP.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	11	<p>The stakeholders in the counties of origins did not agree on the "broad conservation goals" adopted and agreed to by stakeholders external to the counties of origins.</p>	<p>Since 2006, the proposed project has been developed based on sound science, data gathered from various agencies and experts over many years, input from agencies, stakeholders and independent scientists, and more than 600 public meetings, working group meetings and stakeholder briefings.</p>

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			<p>The official public review process for the Draft EIR/EIS and RDEIR/SDEIS provided an opportunity for formal public comment on the proposed project and project alternatives. Public and agency comments on the public draft lead to further refinement of the proposed project.</p>
1729	12	<p>The BDCP ignores the "available science" in terms of the ecological and economic impacts by the BDCP in the counties of origins and upstream watersheds.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	13	<p>The BDCP authors pride themselves on using the best scientific knowledge, but ignoring impacts in the counties of origins and upstream watersheds is not congruent with scientific study.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	14	<p>The BDCP plan spans a 50 year period, but does not include financial resources, plan suspension, legal framework, or plan changes for severe ecological and economic impacts caused by the plan outside of "The Plan" area. While there is adaptive management and monitoring for the "Project Area", there is no adaptive management and monitoring for impacts in the Central Valley not in the "Project Area."</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as</p>

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			<p>it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	15	<p>The BDCP MUST include adaptive management and monitoring for impacts outside "The Project" area.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	16	<p>The BDCP does include action for "Changed circumstances" and "Unforeseen circumstances". (BDCP, pp 14 ff). However, these do not apply to the counties of origin and upstream watersheds.</p> <p>Recommendation: The BDCP include counties of origins when considering "Changed circumstances" and "Unforeseen circumstances".</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>

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1729	17	<p>There is no Adaptive Management and Monitoring Program for counties of origins or upstream watersheds. While one might argue that the science for such a program to identify all economic and ecological consequences of water conveyance did not exist for the Owens and San Joaquin Valleys last century, this is not the case today.</p> <p>Recommendation: The BDCP incorporate "available science" to "Analyze, synthesize, and evaluate" and "communicate current understanding" of the impacts of not having an "Adaptive Management and Monitoring Program" for the counties of origins and present this science to the public. (Note, the words "Analyze, synthesize, and evaluate" and "communicate current understanding" are words from the BDCP in the Adaptive Management section.</p> <p>(See p. 17, Executive Summary, BDCP)</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	18	<p>The BDCP will undertake to "Monitoring and research provide the data needed for informed decision-making." (BDCP, p. 18)</p> <p>Since the BDCP will not "monitor and research" in the counties of origin, their "informed decision-making" will be unscientific and incomplete.</p> <p>The BDCP include adaptive management, monitoring, and research in the counties of origin to make "informed decision-making."</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	19	<p>Consider the BDCP in terms of "Natural Communities":</p> <p>"Consistent with the requirements of the NCCPA, the Plan further provides a multifaceted approach to advance the conservation and management of covered species and their habitats, incorporating a conservation strategy that provides for the protection of habitat, natural communities, and species diversity on an ecosystem level; establishes conservation measures, including measures sufficient to mitigate the effects of covered activities; integrates adaptive management strategies that can be modified based on new information developed through monitoring; and sets out a detailed implementation program, including provisions that ensure adequate funding to carry out the Plan" Section 1-3-3; pp 1-10 ff</p> <p>It is clear that all the provisions in the BDCP in regards to the Federal Endangered Species</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g.,</p>

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		Act, the Natural Community Conservation Planning Act, the California Endangered Species Act, National Environmental Policy Act, California Environmental Quality Act, and other federal and state laws will not be applied to the counties of origins in the same manner they will be applied to the "Plan area".	issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.
1729	20	<p>"Because the SWP and CVP water infrastructure is operated as an integrated system, the effects of implementing the BDCP may extend to aquatic systems beyond the Delta, both upstream and downstream, and will implicate water operations parameters as well as species and their habitats located in those areas. As such, the BDCP effects analysis (Chapter 5, Effects Analysis) takes into account these upstream and downstream aquatic effects, both positive and negative, and describes, analyzes, and addresses the overall effects of the BDCP. Areas potentially affected by the implementation of the BDCP located outside of the Plan Area, have been included in the analysis of effects to ensure that all of the potential effects within the action area (all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action), as defined by Section 7 of the ESA, have been adequately assessed." Section 1-4-1, p 21</p> <p>The above statement is not substantiated by the details in the fine print of the BDCP documents</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	21	The BDCP "may extend to aquatic systems beyond the Delta, both upstream and downstream", but policy makers are not required to undertake those tasks.	The EIR/EIS evaluates all of the potential direct, indirect and cumulative impacts of the alternatives regardless of where they occur.
1729	22	"The BDCP effects analysis (Chapter 5, Effect Analysis)" does not include safeguards to "... take(s) into account these upstream and downstream aquatic effects ..."	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	23	The BDCP notes, very briefly, a relationship between surface water and ground water, but the document does not include any impacts on groundwater resources when surface water	The groundwater analysis in the BDCP and the BDCP/CWF EIR/EIS did not include areas in the Sierra Nevada or Coastal Range because there would be no changes to groundwater in these areas due to the

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		<p>is conveyed south and replaced with groundwater.</p> <p>"Because 17 the Tuscan Formation lies on top of the surface of the lower Sierra Nevada foothills before steeply dipping under the Sacramento Valley, and because it is permeable, it intercepts and stores some surface flow as well as deeply percolating water from local sources. Both the Corcoran Clay and the Tuscan Formation contain or control regional aquifers that are used as alternatives to surface flows." (BDCP, p. 2-21)</p> <p>The BDCP only mentions ""The valley/foothill riparian natural community" in the "Plan Area". (p. 2-56) There is no mention of valley/foothill natural communities -- including their watersheds -- that include the Sierra Nevada/Central Valley water nexus or the Coast Range/Central valley water nexus.</p>	<p>implementation of the BDCP. The groundwater recharge analysis in Chapter 7 of the BDCP EIR/EIS did consider changes in groundwater in the Central Valley due to climate changes in the mountains. Note that the preferred alternative (Alternative 4A) no longer includes the BDCP.</p>
1729	24	<p>Moving water resources from the north to the south will accentuate the movement of ground water from fragile foothill ecological systems. Water markets that allow the selling of surface water from the CVP or SWP to southern corporations and agencies may accentuate the depletion of ground water resources in the Central Valley and threaten fragile foothill/watershed ecological natural communities.</p>	<p>As described in Chapter 3, Description of Alternatives, the action alternatives considered in the EIR/EIS do not include specific water transfers. The EIR/EIS acknowledges that water transfers would continue in a similar manner as historic transfers and in accordance with State and Federal laws and regulations. The EIR/EIS also acknowledges that the use of water transfers between agencies could increase in the future as SWP, CVP, and other surface water supplies are reduced due to climate change, sea level rise, and increased water demand in the Delta watershed, as described in Appendix 1E, Water Transfers in California: Types, Recent History, and General Regulatory Setting, and Appendix 5D, Water Transfer Analysis Methodology and Results, of the Draft EIR/EIS. Because specific agreements have not been identified for water transfers and other non-project voluntary water market transactions, project level analysis of impacts upstream of the Delta is highly speculative and this EIR/EIS does not constitute the CEQA/NEPA coverage required for any specific transaction. Rather, it provides an analysis of how transfers relate to the proposed water conveyance facilities. As indicated in Appendix 5D, the analyses are conservative because it is not known if adequate water would be available from other water users for transfer. Future water transfers are considered in the cumulative impact analysis, including in Section 5.3.4 of Chapter 5, Water Supply, and Section 30.3.5.2 of Chapter 30, Growth Inducement and Other Indirect Effects. However, future water transfers would require project-specific environmental documentation that would consider sources and use of transfer water, and cross-Delta conveyance patterns and amounts.</p>
1729	25	<p>If surface water is transferred from the northern Sacramento Valley via water markets and agricultural land owners and water districts replace this with groundwater, will the Sacramento River dry up each fall? The BDCP must analyze this possibility; it does not.</p>	<p>As described in Chapter 3, Description of Alternatives, the action alternatives considered in the EIR/EIS do not include specific water transfers. The EIR/EIS acknowledges that water transfers would continue in a similar manner as historic transfers and in accordance with State and Federal laws and regulations. Future water transfers would require project-specific environmental documentation that would consider sources and use of transfer water, and cross-Delta conveyance patterns and amounts.</p>
1729	26	<p>"The BDCP Riparian areas serve as the hydrologic connection between terrestrial uplands and aquatic ecosystems, receiving water from precipitation, overland runoff, groundwater discharge, and flow from an adjacent water body or alluvial aquifer (Vaghti and Greco 2007). They provide benefits to water quality by processing and filtering runoff, retaining and recycling nutrients, and trapping sediments (National Research Council 2002). Within the Plan Area, these ecosystem functions have been substantially negatively affected due to the destruction and fragmentation of the community." (p. 2-61)</p> <p>"Although the covered fish species do not rely primarily on riparian habitat because they are aquatic species, they are directly and indirectly supported by the habitat services and food sources provided by the highly productive riparian ecosystem, particularly during flood flows when riparian habitats are inundated. Riparian vegetation is a source for organic material (e.g., falling leaves), insect food, and woody debris in waterways and can influence the course of water flows and structure of in-stream habitat. This debris is an important</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5.</p>

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		<p>habitat and food source for fish, amphibians, and aquatic insects (Opperman 2005)." (p. 2-61)</p> <p>Comment: Since the BDCP ignores the interconnections between Central Valley / foothill natural communities in the counties of origins and only speciously alludes to "upstream/downstream" areas, it is tantamount to allowing the destruction and fragmentation of those natural communities and those ecosystems in the counties of origins, areas upstream, and/or areas downstream.</p>	
1729	27	<p>External costs for counties of origins have not been internalized and therefore the cost estimate in the BCDP may be underestimated. Furthermore, there is nothing in the BCDP documents that allows for contingency funds to be used to address costs imposed on upstream areas and watersheds.</p> <p>The distribution of contingency costs is not specified. Who will pay for these unspecified, future costs?</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	28	<p>Given the historical record on public project cost overruns, those that directly benefit -- water users and water districts -- must pay for these costs.</p> <p>BCDP include on Page 1 of the Executive Summary and press releases to the public that the projected cost overrun in the form of "contingency costs" may be between 20% and 50%. These numbers are currently buried in the BDCP documents. Taxpayers and ratepayers must be clearly warned about the potential "contingency costs" associated with this program. These numbers must be revealed in the BDCP Executive Summary, NOT buried in thousands of pages of documents.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	29	<p>There is virtually nothing meaningful in Chapter 3, "Conservation Strategy" in terms of conservation initiatives or plans for counties of origin. And when "counties of origin" are alluded to, it represents the most shallow "conservation strategy". For example, consider</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in</p>

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		<p>the following statement regarding spring-run Chinook salmon.</p> <p>"The conservation strategy for spring-run Chinook salmon will focus on those life stages occurring in the Plan Area and ensure the timing of actions to benefit those specific life stages coincides with when they would be present in the Plan Area. The conservation strategy also focuses on habitat conditions upstream of the Plan Area, such as water temperature that could be affected by covered activities implemented within the Plan Area." (Chapter 3-3, p. 148)</p>	<p>response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	30	<p>If the BDCP was serious about a conservation strategy for salmon in "upstream", it must be much more comprehensive and detailed instead of a single, vague reference to "water temperature."</p> <p>In terms of the goals for salmon recovery, consider the following numbers for BDCP</p> <p>"Objective SRCS1.1: For spring-run Chinook salmon originating in the Sacramento River and its tributaries, achieve a 5-year geometric mean interim through-Delta survival objective of 49% by year 19 (from an estimated 40%), 52% by year 28, and 54% by year 40, measured between Knights Landing and Chipps Island. The Sacramento River survival metric is an interim value based on limited data from fall-run Chinook salmon in the Sacramento River. This survival metric will be revised to account for new monitoring data and improved modeling expected by year 10.37 For spring-run Chinook salmon originating in the San Joaquin River and its tributaries, achieve a 5-year geometric mean interim through-Delta survival objective of 33% by year 19, 35% by year 28, and 38% by year 40, measured between Mossdale and Chipps Island. Spring-run Chinook salmon do not currently exist in the San Joaquin subbasin, thus these survival metrics are considered very interim." (Chapter 3-3, p.150).</p> <p>The BDCP fails to specify how this will be done if large agricultural corporation agricultural water districts, and municipalities demand more and more water. The BDCP fails to note the impact on salmon populations if holders to water rights are allowed to sell surface water in water markets.</p>	<p>Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process. The preferred alternative is now Alternative 4A and no longer includes an HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>For more information regarding water demand management please see Master Response 6.</p> <p>The State Water Resources Control Board, not DWR, is responsible for decisions relating to water rights. DWR holds water rights approved by the State Water Resources Control Board but does not have the power or authority to issue water rights to others. Additionally, the proposed project does not seek any new water rights nor include any regulatory actions that would affect water rights holders other than DWR, Reclamation, and SWP and CVP contractors.</p>
1729	31	<p>The BDCP includes minor details on the integration of groundwater into The Plan, but there is no discussion of groundwater impacts in the counties of origin and upstream watersheds linked to the operation of conveying water through Delta tunnels. For example consider this statement regarding Reusable Tunnel Material (RTM):</p> <p>"To ensure that underlying groundwater is not contaminated, the invert of the RTM ponds will be a 32 minimum of 5 feet above the seasonal high groundwater table, and an impervious liner will be 33 placed on the invert of the RTM ponds and along the interior slopes of the berms to prevent any 34 contact between the RTM and groundwater. Because groundwater tables are high, it is anticipated 35 that there will be minimal excavation for construction of the RTM ponds." (P.4-13)</p>	<p>The groundwater and surface water analyses in the BDCP and the EIR/EIS do not include areas in the Sierra Nevada or Coastal Range because there would be no changes to surface water deliveries or groundwater use in these areas due to the implementation of the proposed project. The CALSIM II model assumes continued use of surface water supplies as in the Existing Conditions in the No Action Alternative and the action alternatives. The groundwater recharge analysis in Chapter 7 of the EIR/EIS did consider changes in groundwater in the Central Valley due to climate changes in the mountains.</p>

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		<p>While measures are important to not contaminate groundwater in the Plan Area, a entire set of groundwater management issues are not addressed in the BDCP. For example, the BDCP must include the possibility of groundwater over-drafting in the Tuscan Aquifer. Such an event is not addressed by the BDCP; the BDCP will not prevent this event from becoming a reality.</p>	
1729	32	<p>"Non-project Diversions" and Water Transfers</p> <p>"For the purpose of the BDCP, nonproject diversions consist of infrastructure used to divert surface waters within the Plan Area and that is not associated with operations of the SWP or the CVP. This conservation measure has the potential to result in the remediation of an average estimated 100 cfs of diversion capacity per year, beginning in year 6 and continuing throughout the permit term. The level and extent of remediation that occur through this process will depend on the number of participating diverters and the diversion capacity of those participants' diversion facilities." (p. 4-82)</p> <p>"State and federal laws governing water use in California promote the use of water transfers to manage water resources, particularly during water shortages, provided that certain conditions associated with the transfers are adopted to protect source areas, the environment and other users of the water." (p. 4-90)</p> <p>The BDCP must conduct an "Effect Analysis of "nonproject diversions" and "water transfers." This includes northern water right holders selling surface water and then replacing the sold surface water with groundwater. For this event, the BDCP must address the economic and ecological impacts of these water market transfers on the counties of origins and upstream watersheds. The BDCP must comprehensively recognized that the BDCP "Plan Area" is connected to upstream and downstream watersheds.</p> <p>The BDCP only asserts that "certain conditions associated with the transfers are adopted to protect source areas, the environment and other uses of the water." (p. 4-90) But the BDCP does not discuss adverse economic and ecological effects of groundwater pumping in the counties of origin.</p>	<p>Numerous comments were received that focused on various elements of the BDCP. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5.</p> <p>As described in Chapter 3, Description of Alternatives, of the EIR/EIS the action alternatives considered in the EIR/EIS do not include specific water transfers. The EIR/EIS acknowledges that water transfers would continue in a similar manner as historic transfers and in accordance with State and Federal laws and regulations. The EIR/EIS also acknowledges that the use of water transfers between agencies could increase in the future as SWP, CVP, and other surface water supplies are reduced due to climate change, sea level rise, and increased water demand in the Delta watershed, as described in Appendix 1E, Water Transfers in California: Types, Recent History, and General Regulatory Setting, and Appendix 5D, Water Transfer Analysis Methodology and Results, of the Draft EIR/EIS. Because specific agreements have not been identified for water transfers and other non-project voluntary water market transactions, project level analysis of impacts upstream of the Delta is highly speculative and this EIR/EIS does not constitute the CEQA/NEPA coverage required for any specific transaction. Rather, it provides an analysis of how transfers relate to the proposed facilities. Any future water transfers will require separate approvals. The analysis of any potential upstream impacts due to water transfers are not a part of this EIR/EIS and must be covered pursuant to separate laws and regulations once the specific transfer has been proposed.</p>
1729	33	<p>The BDCP must include specific and detailed plans that will safeguard the sustainability of groundwater resources in the counties of origins. A vague reference of "certain conditions" is unacceptable. The BDCP must review and learn from the costly lessons of groundwater pumping in the Owens and San Joaquin Valley and integrate these lessons into specific and detailed plans involving unsustainable groundwater pumping in the counties of origins.</p>	<p>The action alternatives were developed and analyzed to only convey surface water under the water rights issued by the State Water Resources Control Board to DWR and Reclamation for use by the SWP and CVP. As described in Chapter 3, Description of Alternatives, the action alternatives considered in the EIR/EIS do not include specific water transfers except for the continuation of the existing long-term water transfers under the Lower Yuba River Accord. Any future water transfers will require separate approvals.</p>
1729	34	<p>Since the BDCP "Plan Area" is hydrologically connected to upstream and downstream watersheds, The BDCP must include these watersheds in the BDCP "Plan Area" in a detailed and comprehensive manner.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope</p>

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			of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.
1729	35	There are no Conservation Measures in CM1 that will prevent an unlimited amount of "voluntary water" transfers to take place while depleting groundwater resources in upstream and/or downstream aquifers.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. For additional detail on the primary issues being raised with regard to the BDCP or Alternative 4, as well as a discussion of the current status of the draft BDCP Effects Analysis, please see Master Response 5.
1729	36	There is no "effect analysis" in a 745 page chapter (Chapter 5) that analyzes the effect of transferring an unlimited amount of "voluntary water" transfers to take place while depleting groundwater resources in the counties of origin. (See Chapter 5, BDCP)	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.
1729	37	The BDCP does not analyze economic and ecological costs of transferring northern California surface water south via water markets for groundwater banking and then pumping groundwater as replacement water.	As described in Chapter 3, Description of Alternatives, the action alternatives considered in the EIR/EIS do not include specific water transfers. The EIR/EIS acknowledges that water transfers would continue in a similar manner as historic transfers and in accordance with State and Federal laws and regulations. Because specific agreements have not been identified for water transfers and other non-project voluntary water market transactions, project level analysis of impacts upstream of the Delta is highly speculative and this EIR/EIS does not constitute the CEQA/NEPA coverage required for any specific transaction. Rather, it provides an analysis of how transfers relate to the proposed water conveyance facilities. Any future water transfers will require separate approvals. The analysis of any potential upstream impacts is not a part of this EIR/EIS and must be covered pursuant to separate laws and regulations once the specific transfer has been proposed.
1729	38	There is virtually no adaptive management and monitoring in terms of economic, ecological, and indirect costs in the counties of origins in terms of watershed mismanagement. (See Adaptive Management and Monitoring. (See Chapter 3, BDCP)	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as

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			<p>it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	39	<p>The BDCP must not be restricted to 17,644 acres in the Plan Area. The BDCP must include upstream and downstream watersheds and aquifers in terms of "Effect Analysis".</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	40	<p>While Chapter 5 of the BDCP does include a section on "Upstream Habitat Effects", for Chinook Salmon in the Sacramento River and Clear Creek, (see pp. 5.5.4-14) there is no discussion of Chinook Salmon habitat in, for example, Butte County. Will selling surface water south and replacing surface with groundwater adversely affect Chinook salmon habitat in Butte Creek, Chico Creek, or Mill Creek? The BDCP must address this possibility somewhere in this 745 page chapter. It does not.</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>

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1729	41	A search of Ch 5 for "groundwater" turns up zero hits. The entire set of BDCP documents is grossly deficient in including the interconnections between groundwater, surface water, plus foothill and mountain environments.	The BDCP is a report prepared in accordance with the Endangered Species Act and Natural Communities Conservation Plan Act; and does not need to address physical resources such as groundwater. Groundwater effects are addressed in Chapter 7 in the EIR/EIS.
1729	42	Any large water project in California, including the BDCP, must include forested environments surrounding California's Central Valley. This was recently recommended by the Sierra Business Council: ". . . the Sierra Business Council recommends that any new water bond do the following": "Recognize the forested watersheds of the Sierra-Cascade as an area of statewide significance because they provide 65 percent to 75 percent of the state's developed water supply -- including all or part of the drinking water for more than 23 million people and irrigation for one-third of California's agricultural land -- and make up half of the freshwater inflow to the Delta." "Investing in California's primary watershed should be a high priority for the state, regardless of which bill becomes the final vehicle for a 2014 water bond." Source: Viewpoints: Water Bond Must Recognize Sierra's Importance. By Steven Frisch. Special to The Bee, July 28, 2014. http://www.mercedsunstar.com/2014/07/28/3768777/viewpoints-water-bond-must-recognize.html#storylink=cpy	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5.
1729	43	Appendix 9.A Economic Benefits of the BDCP and Take Alternatives contains no analysis or calculations for benefits to water export counties in the northern Sacramento Valley. Appendix 9.B 1 Take Alternative Cost Estimation contains no analysis or calculations of costs to water export counties in the northern Sacramento Valley.	Although the BDCP is no longer the preferred alternative, the BDCP CWF EIR/EIS did include an assessment of potential changes in water supply (FEIR/EIS Chapter 5 Water Supply) which included an evaluation of storage in upstream reservoirs (i.e. Shasta, Oroville, Folsom, etc.) and potential change in river flows. The analysis also included an assessment of water deliveries to CVP and SWP contractors with the Sacramento River Hydrologic (FEIR/EIS Chapter 5 Water Supply, Appendix 5A BDCP EIR/EIS Modeling Technical Appendix, Tables C-52-6-1 and C-52-6-2. The results of this analysis concluded that water deliveries to agricultural, municipal and industrial, and refuges would be identical or nearly identical over the long-term average and during dry and critically dry period between conditions under the No Action alternative and Alternative 4A.
1729	44	"The Stakeholder Council will be formed to provide opportunities for interested parties to consider, discuss, and provide input on matters related to the implementation of the BDCP." (p. 7-19) Central Valley counties of origin are excluded from this Council.	This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. The preferred alternative is now Alternative 4A and no longer includes and HCP. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of

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			the CEQA/NEPA process.
1729	45	<p>The BDCP documents fail to include the plan by county and water agency officials to increase property taxes to pay for this project</p> <p>In July 2014, a number of newspaper articles noting that property tax revenues will be used to fund this project. For example:</p> <p>"In May, the Santa Clara Valley Water District in the San Jose area unanimously approved a resolution supporting an 'override tax' that exceeds Proposition 13 limits to help fund its part of the tunnel project. The San Jose Mercury News reports that the district might raise its property tax rate by almost 70 percent in the next decade under this rule."</p> <p>Source: Twin-Tunnel Allies Want An Open Tax Spigot: Water Agencies May Be Able To Raise Property Taxes Without A Vote U-T San Diego eEdition, By Steven Greenhut, July 28, 2014. http://www.utsandiego.com/news/2014/Jul/28/delta-tunnel-supportersopening-tax-spigot/?#article-copy</p> <p>See also: San Jose Mercury, Property Taxes Could Pay For \$25 Billion Delta Tunnels Without Public Vote, July 22, 2014, By Paul Rogers. http://www.mercurynews.com/science/ci_26198239/property-taxes-couldpay-25-billion-de-lta-tunnels</p>	<p>Master Response 5 provides an overview of funding for the construction and cost of constructing and operating the BDCP including long term cost and debt financing.</p>
1729	46	<p>The BDCP must include how property taxes will be used to pay for this project, how much each county receiving the benefits will pay in property taxes, and how much the average property tax bill will increase.</p> <p>If water revenue bonds for this project cannot be sold at market interest rates (weighted by tax benefits to bond purchasers) to fund this project without the backing of property taxes, then the market is sending a signal that the BDCP is economically unfeasible.</p> <p>To insure that "users pay" for the BDCP, only Water Revenue bonds must be used for this project. General Revenue bonds must not be used for this project.</p> <p>The current bond measure for the November 2014 states that up to \$11.1 billion in General Revenue Bonds may be sold by the state under Proposition #43.</p> <p>* Source: http://www.lao.ca.gov/ballot/2014/prop-43-110414.aspx</p> <p>If General Revenue bonds are used as a means to secure initial funding for this project, then the State may require those not benefiting from the "The Plan" repay the bonds of the BDCP.</p> <p>The Department of Water Resources must include the statement in Water Revenue bond perspective that the bonds are only backed by the revenues generated by water users plus revenues pledged by the Federal government, other non-State sources, and non-property tax sources.</p>	<p>Master Response 5 provides an overview of funding for the construction and operation of the BDCP. Master Response 38 provides an overview of the cost of constructing and operating the BDCP including long term cost and debt financing.</p>
1729	47	<p>Table 8-40, (p. 8-69) is titled "Potential Funding Source by Conservation Measure -- Other Aquatic Stressors" and a footnote includes the following limitation</p> <p>"This table notes potential funding sources and does not imply dedicated or guaranteed</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises</p>

DEIRS Ltr#	Cmt#	Comment	Response
		<p>funding."</p> <p>Comment: In Chapter 8, section 4.2 includes a paragraph on "Actions Required in the Event of a Shortfall in State or Federal Funding" (page 8-122) but does not include that rural and urban water agencies officials have already publicly stated that they will increase property taxes to partially pay for this project. Such an "Action" must be included in this the BDCP document.</p>	<p>of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	48	<p>The BDCP must include a transparent statement and analysis of funding sources. If water users are to pay, the increase rates attributable to those using this water must be prominently publicized in the BDCP Executive Summary</p>	<p>This comment addresses Alternative 4 (known also as the BDCP) or analysis contained within the draft BDCP Effects Analysis. In response to comments received during the 2013-2014 public comment period, State and Federal agencies decided to change the approach. Alternative 4 remains a viable alternative. Numerous comments were received that focused on various elements of the BDCP. Where the comments focused on elements of the BDCP that overlap with the elements of Alternatives 2D, 4A, or 5A (e.g., CM1 as it comprises of the North Delta Diversions, tunnels, and supporting facilities), specific responses are presented. Where comments raised issues as to whether the BDCP and other HCP/NCCP alternatives in the 2013 Draft EIR/EIS were potentially feasible and could function as an alternative for purposes of meeting CEQA and NEPA's requirements to analyze a reasonable range of alternatives to the proposed project (e.g., issues regarding the BDCP Effects Analysis or financial feasibility), responses are presented generally in Master Response 5. Where comments submitted on the BDCP were focused on elements outside the scope of the environmental analysis or viability of the BDCP and other HCP/NCCP alternatives within the context of CEQA/NEPA (e.g., request of specific revisions to the BDCP related to mapping or references), no specific responses are provided and further consideration will be given to these comments, and any revisions to the Draft BDCP would only be made, if an HCP/NCCP alternative was ultimately approved at the conclusion of the CEQA/NEPA process.</p>
1729	49	<p>"An economic impact analysis of the BDCP concludes that the Plan would increase California business output by over \$83.5 billion and create or preserve up to 1.1 million jobs (The Brattle Group 2013)." [p. 8 -109]</p> <p>There is no analysis of who would benefit from this \$83.5 billion dollar increase. The Brattle Group must ascertain how such benefits would impact those on the lower end of the distribution of income or reduce poverty in California. Furthermore, The Brattle Group must specify how many jobs would be created if public fund dollars were spend on other endeavors. If the BDCP will be a mechanism to shift income and wealth to the top 10% of households, then this project dimension should be included in the Executive Summary.</p>	<p>Please note that the Statewide Economic Impact Report is not a part of this EIR/EIS. Additionally, DWR is revising the Socioeconomic Impact Analysis for the project based on changes included in the Recirculated Draft EIR/Supplemental Draft EIS.</p>