

DEIRS Ltr#	Cmt#	Comment	Response
1750	1	I am writing to strongly oppose the Governor's proposed twin tunnel plan to ship Northern California water to Central Valley farming interests and Southern California water users. Using the misnomer, the Bay Delta Conservation Plan, the plan is simply a water-transfer-grab by Central Valley and Southern California water interests. This grab will involve two tunnels, estimated at \$25 billion but will cost much more - no estimate of its funding source or actual costs have been produced.	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 an HCP. Alternative 4A has been developed in response to public and agency input. 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.
1750	2	This plan is yet another water conveyance system, another technological fix and another State-sponsored boondoggle that will never satisfy the thirst for water and profits by agribusiness, developers and land speculators. The plan is a reflection of the failure of both the Governor and Legislature in not honestly addressing our water policies and supply problems and offering reasonable solutions/options. This proposal is a bad deal for all of California and should not be approved in any form!!!	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 an HCP. Alternative 4A has been developed in response to public and agency input. 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.
1750	3	<p>The Peripheral Canal Referendum (Proposition 9) was defeated by California voters (63 to 37%) in June, 1982, and sent a clear message to all Californians that water was our most precious resource, needed to be conserved and that water policy was something that had to be carefully managed so that no one special interest controlled policy or the resource. Since the day the referendum was defeated, powerful Central Valley and Southern California interests have been working on the next plan to take more Sacramento River water to the Central Valley and Southern California. Now we have before us, the twin tunnels plan, the Peripheral Canal II.</p> <p>Water is the life-blood of California, a semi-arid desert that would not be here in its present state without our most precious resource, water. Yes, here we are again facing the prospect of a water transfer system proposed by Governor Brown and backed by Central Valley farming interests.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>The proposed project is being developed to address many complex and long-standing issues related to the operations of the SWP and CVP in the Delta. The BDCP/California WaterFix is not an attempt to replace 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>
1750	4	What is most egregious is that had it not been reported, Californians would not be aware that Governors Davis, Schwarzenegger and Brown have essentially given over our water policy to private agribusiness interests for campaign contributions (Stewart and Lyndia Resnick, Paramount Farms, Westside Mutual Water Company, Roll International, and the list goes on). This is a violation of their duties as trusted public servants, and they are essentially selling California's water system to the highest bidder for campaign contributions. This is unacceptable! They did an end-run around the voters of California. And, that the Department of Water Resources is complicit in this and acting as a subsidiary of water exporters is beyond unacceptable! What has gone wrong in Sacramento? Senators Feinstein and Boxer have taken substantial contributions in return for legislation that would strengthen the position of agribusiness in the Central Valley at the expense of urban residents. The Governor, in his most sleazy political tactic yet to isolate voters from the process and the truth of what is going on, did not see fit to ask his constituents, the voters, if this was a good idea but instead worked behind the scenes by given control of this issue over to billionaires who receive our tax-payer subsidized water. Something is very,	The commenter's comment is acknowledged. However, it is not evident that the commenter is making a comment on the BDCP or on the BDCP EIR/EIS. Therefore, no response is required.

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		very, very wrong in Sacramento!	
1750	5	Heavily water-dependent agriculture uses 85% of all water supplies in California. One need only look at the list prepared by National Geographic of water use by specific agriculture, industrial and urban practices to see where our population growth cannot be sustained with limited resources. Farmers have traditionally increased their use of subsidized water and then taken from groundwater sources accumulated over thousands of years, especially in the recent drought years (this one lasting 15 years so far). With the current drought situation, groundwater in California is being depleted at a more alarming rate by agribusiness interests who are pushing the twin tunnel plan, with no end in sight and no re-charging of the aquifers. The Central Valley is sinking and the Sierra Nevada Mountain are rising. Researchers have analyzed satellite data and found the Colorado River Basin has lost 65 cubic kilometers - 17.3 trillion gallons - of water between December, 2004 and November, 2013. We need to identify existing groundwater sources and manage and restrict its extraction to prevent a catastrophe when the well runs dry. With over 3,000 water agencies involved, there is no central or accountable management of groundwater.	State constitutional restrictions require the reasonable and beneficial use of water and state law requires that water supplied from the Delta be put to beneficial uses. The Lead Agencies do not have the authority to designate what water deliveries are used for or what types of agricultural practices are used. Please refer to Master Response 34 regarding the potential uses of water delivered via BDCP proposed conveyance facilities and Master Response 6 regarding water demand management.
1750	6	The Governor called for mandatory rationing with a 20% reduction in use, yet overall use increased statewide by 1% and 8% in Los Angeles, Riverside and San Diego counties, and 5% along the eastern boundary with Nevada to the Oregon border. We have over-use by agribusiness who are planting water-intensive almonds, walnuts and pistachio orchards and other water- intensive crops, the fracking industry using eight million gallons per well, and people, mostly in Southern California, simply not conserving. And the Governor failed to call on agribusiness and the oil industry to conserve and do their part. A bit disingenuous of the Governor!	<p>The BDCP/California WaterFix project is being proposed to address the conflict between the ecological needs of a range of at-risk Delta species and natural communities, while providing for more reliable water supplies for people, communities, agriculture, and industry. The proposed project does not propose any changes to existing agricultural practices or water-use practices.</p> <p>State constitutional restrictions require the reasonable and beneficial use of water and state law requires that water supplied from the Delta be put to beneficial uses. The Lead Agencies do not have the authority to designate what water deliveries are used for. Please refer to Master Response 34 regarding the potential uses of water delivered via BDCP proposed conveyance facilities.</p> <p>Through the Legislature and through executive agencies, California has embraced water conservation on numerous fronts, as have many California water agencies. Many of these efforts are highlighted in Appendix 1C, Demand Management Measures, EIR/EIS, which describes conservation, water use efficiency, and other sources of water supply, including recycled water. While these elements are not proposed as part of the BDCP, the Lead Agencies recognize that they are important tools in managing California's water resources.</p>
1750	7	What is needed is not ridiculously expensive tunnels to move water we do not have south to special interests who want taxpayers to pay for the transfer system and get subsidized water, but the development of new sources of water. The only present option is desalination plants along the coast pumping treated water into the Central Valley water system to replace the lack of rainfall/snowpack and groundwater extraction overuse. Even if it started raining now and rained for years, we would never catch us for the loss in use and groundwater depletion.	<p>Please see Master Response 7, which describes why an alternative focused on desalination is not included in the EIR/EIS. Desalination is one strategy used in California to develop new supplies, yet it is not the primary solution for the State's water shortage due to many factors, including limited capacity and technology, high costs and energy demands, and regulatory uncertainty.</p> <p>Please see Master Response 5 regarding the adequacy of the BDCP funding strategy for the regulatory purposes of the BDCP. As described in the 2013 BDCP in Chapter 8, all mitigation associated with the proposed water conveyance facility would be paid for by the participating state and federal water contractors (see Table 8-41). For a discussion of effects on upstream water rights, please see Master Response 32.</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. The EIR/EIS analyzes all alternatives, including Alternative 4A.</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</p>

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			<p>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>
1750	8	<p>As reported by Paul Rockwell in an op-ed piece, "It is absurd to believe that one more engineering project, crafted by the same power elites that have dominated water policy throughout the 20th century, will somehow bring stability to a state whose leaders continue to promote growth in desert regions already living beyond their regional means."</p> <p>Given agribusiness's insatiable demand for control of water and maximized profits, there may be little hope of a reasoned solution in the current political climate of climate change. The twin tunnels are certainly not the answer...you can't re-route and transport what isn't there!!!</p>	<p>State constitutional restrictions require the reasonable and beneficial use of water and state law requires that water supplied from the Delta be put to beneficial uses. The Lead Agencies do not have the authority to designate what water deliveries are used for or what types of agricultural practices are used. Please refer to Master Response 34 regarding the potential uses of water delivered via BDCP proposed conveyance facilities and Master Response 6 regarding water demand management.</p>
1750	9	<p>We need to extend the public comment period and for a new more open and honest Draft Bay Delta Conservation Plan (BDCP) and have a full and complete Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The EIR/EIS is fatally flawed due to its failure to include a viable, realistic funding plan and explanation of costs and options, exclusion of any true no-tunnels alternatives and its failure to comply with the Endangered Species Act. More troubling is the deliberate BDCP website suppression of comments, misrepresenting taking water to be a "conservation plan and secret BDCP planning with the exporters and their consultants, and lack of public outreach to all California, but especially non-English speakers who will in many ways be the most affected.</p>	<p>The lead agencies have extended the public comment period for both the Public Draft EIR/EIS and the RDEIR/SDEIS. Also, RDEIR/SDEIS comments were available to the public through the BDCP website at <a href="http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS_Comments.aspx">http://baydeltaconservationplan.com/2015PublicReview/PublicReviewRDEIRSDEIS_Comments.aspx</a>. In addition, public comments are available to the public in this FEIR/EIS.</p> <p>Please note that new preferred alternative, 4A, no longer includes the BDCP HCP or conservation measures. Nevertheless, various components of the original BDCP conservation measures are included in Alternative 4A to mitigate impacts associated with construction and operations of the project, consistent with state and federal laws and regulations such as the Endangered Species Act. Also, see Master Response 27 regarding outreach to minority and disadvantaged communities potentially impacted by the project.</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>Also, see Master Response 4 regarding the range of alternatives analyzed in the EIR/EIS.</p>
1751	1	<p>This letter is submitted on behalf of Bogle Vineyards ("Bogle"). Bogle, located in Clarksburg, California, is within the area represented by Local Agencies of the North Delta ("LAND"), and accordingly incorporates by reference LANDS's extensive comments on the BDCP and its EIR/EIS that are separately transmitted. However, the BDCP's potentially devastating implications for the Delta and its communities, economy and environment have compelled Bogle to also indicate its individual opposition to the BDCP.</p>	<p>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 Natural Resources Agency and DWR staff will continue seeking improvements and refinements to the current proposal in order to enhance species benefits and to avoid, reduce or mitigate for negative impacts to people, communities, sensitive species and habitats. The commenter should also refer to the following Master Responses: 3 (Purpose and Need), 5 (Overview of Restoration and Enhancement Activities), 34 (Beneficial Use of Water), 35 (MWD Water Supply), 25 (Upstream Reservoir Effects), 17 (Impacts on Smelt), and 24 (Delta as a Place). Lastly, refer to the Lead Agencies' responses related to the comments provided by</p>

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			the Local Agencies of the North Delta ("Land")'s comment letter (No. 1787).
1751	2	Instead of helping to restore the Delta, the BDCP is a massive water removal project with potential to cause more ecological harm to the Delta than anything else that has occurred since the last large infrastructure was built by the state and federal water projects. The BDCP fails to reduce reliance on water from the Delta and will instead create fictional water supplies to justify taking more water than the state and federal water projects have historically exported. As a result, this will devastate the unique cultural, recreational, natural resource, and agricultural values of the Delta.	<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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>The action alternatives could only deliver the amount of water diverted under the existing SWP and CVP water rights and in accordance with the existing and future related regulatory requirements based upon river water levels and flow, water available in the system, the presence of threatened and endangered fish species, and water quality standards. The proposed water conveyance facilities, including water intakes and pumping plants would be operated in accordance with permits issued by the State Water Resources Control Board, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and State Department of Fish and Wildlife. The proposed project only would be permitted to operate with regulatory protections, including river water levels and flow, which would be determined based upon how much water is actually available in the system, the presence of threatened fish species, and water quality standards.</p> <p>The EIR/EIS describes benefits and adverse impacts that could occur in the Delta through implementation of Alternatives 1 through 9 as compared to the Existing Conditions and the No Action Alternative.</p>
1751	3	The fundamental ecological premise of the BDCP is fatally flawed. The BDCP presupposes that removing nearly half of high quality freshwater from the Sacramento River system will be a net benefit for listed aquatic species while losing up to 5 percent of the remaining Sacramento River salmonids as they attempt to run approximately 4,400 feet of almost consecutive intake screens in just three river miles. All the while, BDCP refuses to build effective fish barriers on the South Delta pumps, which will still operate much of the time.	<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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>
1751	4	Improving the Delta's ecology cannot possibly happen by removing even more water from the system. Yet, the BDCP proposes to take as much water as possible and hope that a future "habitat" fix will keep it all working. However, the scientific basis for the habitat is thin at best and is far likelier to improve conditions for the very invasive species that currently harm the Delta. In order to retain their 50-year permit in the face of likely	<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 an HCP. Alternative 4A has been developed in response to public and agency input. Numerous comments were received that focused on various elements</p>

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		ecological failures, the BDCP simply states that meeting biological goals and objectives is not a requirement of the project. To mitigate for its own, new biological impacts, the BDCP says it will build some habitat, somewhere, to be analyzed at some future point in some future document. That new habitat comes at a cost to the exiting, already imperiled, habitat of the Delta, mainly by trading off one set of listed terrestrial species for aquatic species.	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.
1751	5	Local landowners are forced to sell or have their land condemned. Multi-generational farming families will be challenged to continue farming in what is presently an ideal agricultural region containing 738,000 acres of prime farmland. Even if a few landowners manage to remain in the Delta, they will be adjacent to major land and water use changes that will completely alter existing conditions for the worse. The discussion of the BDCP's impacts on agricultural resources in the EIR/EIS is inadequate. The character and magnitude of the impact of the project on agricultural resources is not disclosed.	Chapter 14, Agriculture, and Chapter 16, Socioeconomics describe potential impacts to agriculture and to agricultural economics, and meet NEPA and CEQA requirements. Please note that the preferred alternative is now Alternative 4A and no longer includes a habitat conservation plan or conservation measures. Alternative 4A has been developed in response to public and agency input. The EIR/EIS analyzes all alternatives, including Alternative 4A.
1751	6	Unfortunately, the vast majority of issues significantly affecting in-Delta interests have been ignored or affirmatively swept under the rug. A positive outcome for everyone requires a true collaborative approach and attention to protection of in-Delta values, but has not yet occurred. The BDCP, after years of development, still does not present a project that would be acceptable to Delta communities.	<p>Since 2006, the BDCP 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. All of the documents, studies, administrative drafts, and meeting materials have been posted online since 2010 in an unprecedented commitment to public access and government transparency. The official public review process for the Draft BDCP and EIR/EIS, and the RDEIR/SDEIS provided an opportunity for formal public comment on the proposed project and project alternatives. Please see Master Response 40 for information on public outreach efforts.</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>
1752	1	<p>Comment re BDCP initial EIR, etc.:</p> <p>Summary: Current reliable, hard data show the risks of a rise in gross mean sea level are starkly higher, my meters, than those assumed in the data relied upon for the draft EIR. The risks of a catastrophic rise are substantially higher than assumed, even within the 60-year initial permit period, and move from very high risk to scientific certainty for the multi-permit period lifetime of the BDCP. This rise level effectively moots the BDCP from multiple standpoints. These range from basic engineering and salinity precepts to broader issues of trying to avoid a significant portion of the Central Valley being submersed under high-saline brackish or ocean waters. This realization by Central Valley residents, agri-business, and real estate interests are likely to spur a shift in resources to what will be almost certainly be "last minute efforts" to try a massive infrastructure construction project to prevent the Central Valley from again becoming an inland ocean.</p> <p>According to a NASA article of Jan. 21, 2014, "Long-Term Climate Warming Trend Sustained in 2013", NASA measurements show the earth has been getting hotter:</p> <p>"NASA scientists say 2013 tied with 2009 and 2006 for the seventh warmest year since 1880, continuing a long-term trend of rising global temperatures. With the exception of 1998,</p>	<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 BDCP/CWF conveyance facilities, an analysis would be completed with updated sea level rise projections for the life cycle of the facilities. As described in 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>The preferred 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</p>

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		<p>the 10 warmest years in the 134-year record all have occurred since 2000, with 2010 and 2005 ranking as the warmest years on record.</p> <p>"NASA's Goddard Institute for Space Studies (GISS) in New York, which analyzes global surface temperatures on an ongoing basis, released an updated report Tuesday on temperatures around the globe in 2013. The comparison shows how Earth continues to experience temperatures warmer than those measured several decades ago.</p> <p>" 'Long-term trends in surface temperatures are unusual and 2013 adds to the evidence for ongoing climate change,' GISS climatologist Gavin Schmidt said. 'While one year or one season can be affected by random weather events, this analysis shows the necessity for continued, long-term monitoring.' "</p> <p>&lt;<a href="http://science.nasa.gov/science-news/science-at-nasa/2014/21jan_2013/">http://science.nasa.gov/science-news/science-at-nasa/2014/21jan_2013/</a>&gt;</p> <p>The BDCP EIR released in 2014 relied on Global Warming and sea level rise data from 2007. Such data is basically, ancient history in the context of Global Warming and sea level rise research. Use of such grossly out of date data is the only way the BDCP EIR could ever have gone forward politically, scientifically, or otherwise. Had staff been allowed by political decision makers to use current data, it would have demonstrated conclusively, based on sound scientific data, that the BDCP is fundamentally impossible.</p> <p>However, such gamesmanship with the data has allowed policy makers to claim they are making progress on the topic, thereby allowing them to continue garnering huge campaign donations from well-heeled real estate developers, particularly from water hungry Southern California region. (Should the public realize how much they have been effectively "bamboozled" by policy makers on this, it may, ironically, be the one impetus that might actually be able to propel the current initiative to "split up" California into multiple states.)</p>	<p>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>
1752	2	<p>This year (2014) saw numerous new scientifically valid reports and data on global warming and climate change and attendant ice pack melting causing gross mean sea level rise. More realistic sea level rise predictions from both national and international sources suggest BDCP assumptions are too conservative by meters and by decades. Such data and reports also are now beginning to show that the ice pack melting driving the rise in gross mean sea level is now "irreversible". Thus, the issue is no longer one of "what if" but when and how much.</p> <p>One report in particular, regarding the now irreversible decay in just the Western Antarctica Ice Sheet, maps out the global 10 ft. rise expected by 2010, just from that ice sheet ALONE. Just that one sea level rise source, alone, will not only cause inundation of large swaths (basically all) of the natural habitat areas addressed in the BDCP EIR, but it will also basically inundate large swaths of the Central Valley, covering up to one-half of the Cities of Stockton and Elk Grove. Other areas, such as Woodbridge, Fairfield, and Land Park in Sacramento would basically become new "beachfront properties" (or "marsh front properties"), absent unprecedented infrastructure development. Not only will many of the Delta habitat areas and even "Agri-Islands" be lost, but also even massive chunks of the Central Valley, arable, non-island, land now used for Agri-business interests, as well. See e.g.:</p> <p><a href="http://science.nasa.gov/science-news/science-at-nasa/2014/12may_noturningback/">http://science.nasa.gov/science-news/science-at-nasa/2014/12may_noturningback/</a></p> <p>See websites re economic impacts, e.g.:</p>	<p>The commenter cites many good sources of information discussing the science pertaining to and the risks associated with extreme Antarctic and Greenland surface ice sheet failures and melting that could lead to extreme increases in global mean sea level. However, the commenter confuses the time frame over which these impacts are expected to occur. For example, the commenter states that "One report in particular, regarding the now irreversible decay in just the Western Antarctica Ice Sheet, maps out the global 10 ft. rise expected by 2010". 2010, being in the past, obviously we didn't see 10ft of sea level rise. NOAA and other experts have estimated these extreme impacts to be likely to occur of 200-500 years (from the commenters own citations: <a href="http://www.businessinsider.com/west-antarctic-ice-sheet-collapse-means-2014-5">http://www.businessinsider.com/west-antarctic-ice-sheet-collapse-means-2014-5</a>), and not over the permit life of the project.</p> <p>Nevertheless, Sea Level Rise is a major concern and one that has been considered within in the modeling and impacts assessments for all the project alternatives and the no project / no action alternative. Please see Master Response 19 regarding Climate Change comments for more information about the sea level rise analysis that was done and how that analysis complies with the Delta Reform Act and other requirements for the proposed project.</p>

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		<p><a href="http://www.businessinsider.com/west-antarctic-ice-sheet-collapse-means-2014-5">http://www.businessinsider.com/west-antarctic-ice-sheet-collapse-means-2014-5</a></p> <p><a href="http://www.washingtonpost.com/business/economy/former-treasury-secretaries-financial-leaders-press-business-to-cut-climate-change-risks/2014/06/23/72c88274-fb15-11e3-8176-f2c941cf35f1_story.html">http://www.washingtonpost.com/business/economy/former-treasury-secretaries-financial-leaders-press-business-to-cut-climate-change-risks/2014/06/23/72c88274-fb15-11e3-8176-f2c941cf35f1_story.html</a></p> <p>See also websites further below.</p> <p>And the Eastern Antarctic Ice Sheet is also at significant risk:</p> <p><a href="http://news.yahoo.com/east-antarctica-more-risk-thought-long-term-thaw-171024477.html">http://news.yahoo.com/east-antarctica-more-risk-thought-long-term-thaw-171024477.html</a></p> <p>And NASA reports show the Arctic Ice Pack melt season is lengthening, e.g.:</p> <p><a href="http://science.nasa.gov/science-news/science-at-nasa/2014/01apr_arcticice/">http://science.nasa.gov/science-news/science-at-nasa/2014/01apr_arcticice/</a></p> <p>While there are possibilities to use that huge salt water intrusion/expansion to create huge salt water marsh habitat areas, the state Agri-business and Real Estate interests will demand, and (given their political donations/clout) quite likely receive, huge cement sea wall super-levees all around their existing "islands", and soon-to-be "islands" in an areas stretching Eastward basically to Hwy 99 across swaths of the Central Valley.</p> <p>Such massive cement super-levees will be one of the very few remaining options available, since the gross mean sea water level rise will be so high as to overtop the existing earthen levy system. And such earthen levy system would become structurally unsound long before being overtopped -- from water pressure to natural wave action, much less the risks of liquefaction during a serious seismic event.</p> <p>The air pollution impacts of the massive construction for the cement super-levees alone would far outpace anything set out by the BDCP EIR (and the Bullet Train combined).</p> <p>The basic functionality of the BDCP will be utterly mooted, anyway, because the entire currently extant Delta area and anticipated BDCP complex substantially submersed under brackish or salt water anyway.</p> <p>I have personally interviewed geologists at Sac State, who, privately, are also quite worried about the risks of another independent, and even greater source of sea level rise -- the rapid melt, then "slide off" of the Greenland glacial ice sheets, (i.e., in addition to those in Antarctica, above), etc. Under current scientifically valid estimates (including based on geological evidence of such a past event), the addition to the Greenland ice sheet waters to the world oceans is estimated to independently cause a far more massive gross mean sea level rise, up to 20 ft, and on a vastly faster time scale, given the past geologic record showing that exactly this scenario has happened in the past and will occur again. See the book "Flooded Earth" by Prof. Peter Ward &lt;<a href="http://www.worldpreservationfoundation.org/blog/news/biologist-warns-of-danger-from-rising-sea-levels/#.U6oEmrGM7qw">http://www.worldpreservationfoundation.org/blog/news/biologist-warns-of-danger-from-rising-sea-levels/#.U6oEmrGM7qw</a>&gt;</p> <p>Prof. Ward raises the geological historical fact that when the Greenland ice sheet starts melting, and moving -- due to sub-glacial lubrication from melt water at the bottom of the ice at the ice/land interface, the increased glacial movement in turn increase friction, causing even more melting, proving more water at the interface, causing more movement, etc., in a cyclic, cascading effect. The net result is that, from a historical geological perspective, the Greenland ice sheet tends to just slide off the land mass, en mass, very</p>	

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		<p>precipitously, causing tidal waves and very rapid sea level rise on an unprecedented scale. (Such an event would wipe out more people, cities, and wealth than a full scale nuclear war. Countries such as Bangladesh will basically cease to exist.) See e.g.:</p> <p><a href="http://finance.yahoo.com/news/flooded-british-villages-ignite-climate-debate-144050840--finance.html">http://finance.yahoo.com/news/flooded-british-villages-ignite-climate-debate-144050840--finance.html</a></p> <p>The combined risk of just the 20 ft. rise from the Greenland Ice Sheet melt and rapid "slide off" PLUS the now irreversible 10 ft. rise from an Antarctic sheet, means an anticipated gross mean sea level rise of 30 ft., with a substantial part of that at risk during the first 60 year permit period for the BDCP. Large swaths of the Central Valley are less than 30 ft. above current sea level.</p> <p>This means massive, wholesale, unavoidable environmental impacts and disruptions on a massive -- extinction-event type scale -- dwarfing the environmental concerns otherwise admirably expressed in the BDCP EIR. See, e.g., Article on Arrival of 6th Earth Mass Extinction at Science Daily: <a href="http://www.sciencedaily.com/releases/2014/07/140724171956.htm">http://www.sciencedaily.com/releases/2014/07/140724171956.htm</a></p> <p>However, NO ONE connected to BDCP seems to even be talking about these rather dire outcomes based on established science.</p> <p>The Sac. State geologists independently mirrored others' concerns that the only way to stop the inundation of the Central Valley from the coming, unavoidable, massive gross mean sea level rise and salt water intrusion would be some type of massive, Three-Gorges-Dam-equivalent across the inner Bay/Delta area. Such a massive public works project (with massive environmental devastation of all kinds and massive costs dwarfing the BDCP and Bullet Train combined) would necessarily create a fresh water "ocean" out of much of the Central Valley, backing up behind it well into the far reaches of the Central Valley, as opposed to allowing it to become a brackish or salt water inland ocean. However, given the massive human-scape infrastructure of the East Bay, Sacramento, etc., prompt immediate massive environmental clean-up would be required to render the new Central Valley fresh water sea to be useable.</p> <p>Just to recap, even the massive "dam" scenario will not, and cannot, stop the eventual, and inevitable, inundation of the Central Valley. It will just change the inundation it from salt to fresh water. Either way will cause massive environmental, economic, Agri-business, Real Estate, and other significant disruptions.</p> <p>Below are links to the general study, and map of the Stockton/Delta area reflecting the 10 ft. rise that will now occur based solely on the West Antarctic glacial cap ice melt, etc. Others are readily available, if the decision makers will but stop hamstringing scientific staff with the inane bar to using "current", real-time, valid scientific data and reports.</p> <p>I regret to be the bearer of such unfavorable tidings. And as with the Climate Change deniers generally, it is doubtful that the big money interests behind the BDCP will allow bothersome little problems like the valid science behind of gross mean sea level rise to slow down their push for the BDCP. Which means natural habitat areas will be placed literally between the proverbial rock and a hard place (or rather, the coming cement super-levees and the massive sea level rise and salt-water intrusion, or else the Straits Dam type scenario).</p>	

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		It seems public knowledge now that most of the Climate Change denier "scientific report backup" was funded by Exxon, basically as a negotiation tactic, until it managed to land the bulk of the oil exploration rights across the Arctic Circle. (It seems Exxon is already planning on the coming major melting wrought by Global Warming throughout the Arctic region in their long range plans and forecasts, so as to allow them to place Gulf of Mexico type oil rigs all the way up to the North Pole in the not too distant future.) Now they have their future oil exploration rights locked up, Exxon has now reversed course and acknowledged the fact of Global Warming and sea level rise, and is asking policy makers to do something about it.	
1752	3	[ATT 1: Link to article on climate change and sea level rise.]  <a href="http://www.scientificamerican.com/article/what-does-the-u-s-look-like-after-3-meters-of-sea-level-rise/">http://www.scientificamerican.com/article/what-does-the-u-s-look-like-after-3-meters-of-sea-level-rise/</a>  "What Does the U.S. Look Like after 3 Meters of Sea Level Rise?"	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.
1752	4	[ATT 2: Link to article on rising sea level.]  <a href="http://sealevel.climatecentral.org/surgingseas/place/cities/CA/Stockton#show=cities&amp;center=8/37.963/-121.302&amp;surge=10">http://sealevel.climatecentral.org/surgingseas/place/cities/CA/Stockton#show=cities&amp;center=8/37.963/-121.302&amp;surge=10</a>  "Surging Seas / Cities / Stockton, California"	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.
1752	5	I would prefer to have been able to comment on the many ways to help to preserve natural wildlife and plant habitats such as the Cosumnes River Preserve off Interstate 5 south of Sacramento, just to name one prime example.  However, that preserve, and basically all the currently extent Delta are already unavoidably doomed by the effects of Global Warming and gross mean sea level rise.  The BDCP, as currently planned, is now a mooted "boondoggle", on a far grander scale than any "Bridge to Nowhere". Indeed, it is now worse than useless, as it only serves to distract us by "fiddling while Rome burns" (or rather dithering while the Central Valley floods). It may be intended by large Ag and Real Estate interests as a "warm up" for the massive and sweeping environmental engineering that will be demanded once the general population realizes the true dangers to come (not just risks that "might" come) from Global Warming and gross mean sea level rise on a massive and unprecedented scale.	No issues related to the adequacy of the environmental impact analysis in the EIR/S were raised. The proposed project was developed to meet the rigorous standards of the federal and state Endangered Species Acts, as such the proposed project is intended to be environmentally beneficial. By establishing a point of water diversion in the north Delta and new operating criteria to improve water volume, timing, and salinity, the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility.
1752	6	Please also Note: There are numerous additional factors in the rapid advance of global warming, and thus gross mean sea level rise. These range from use of "fracking" techniques which inject super-hot-house gasses such as methane into the atmosphere, to the thawing of the Arctic permafrost, which holds an estimated one-fourth (25%) of the carbon dioxide on Earth. See, e.g.:  <a href="http://www.canada.com/technology/Mysterious+giant+crater+earth+discovered+Siberia+World/10035027/story.html">http://www.canada.com/technology/Mysterious+giant+crater+earth+discovered+Siberia+World/10035027/story.html</a>	No issues related to the adequacy of the environmental impact analysis in the EIR/S were raised.
1752	7	[ATT 3: Article entitled "Climate Change 2014: Impacts, Adaptation, and Vulnerability"]	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.

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1753	1	<p>While the BDCP was originally intended to meet the co-equal goals of restoring the vital Bay-Delta ecosystem and improving water supply reliability, it is my opinion that the current proposal fails to do either.</p> <p>The proposed BDCP ignores the overwhelming scientific evidence that we must increase the amount of water flowing through the Delta to restore it to health. The BDCP, instead, focuses on diverting away even more river water than what is already diverted annually.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>
1753	2	<p>I object to the Conservation Measure 15 (CM 15). CM15 threatens the entire Delta Community, not just the fishery. An entire community of marinas, restaurants, groceries/gas retailers, service repair shops, and fishing/boating retail/services plus the economy that goes beyond the immediate area of the Delta would be severely affected by the eradication of Striped Bass.</p> <p>The BDCP apparently needs to be reminded that Striped Bass have made the Delta its home for over 130 years. Lives, family legacies, and a way of life for so many multi-generational California families revolve around the 130 years of the California Delta Striped Bass, which is a California natural resource that is to be managed and protected, not eradicated.</p>	<p>As noted in the discussion of the recreation effects of CM15, implementation of this conservation measure is not anticipated to appreciably reduce Delta-wide abundances of predatory game fish (including striped bass) to the extent that recreational fishing would be adversely affected (refer to Chapter 15, Section 15.3.3.9, Impact REC-9, EIR/EIS; also refer to Chapter 11, Fish and Aquatic Resources, Section 11.3.4.9, EIR/EIS). As a result, economic impacts on businesses and communities that benefit from the striped bass fishery are also anticipated to be minimal.</p>
1753	3	<p>Before take permits can be issued under a habitat conservation plan, funding must be shown to be sufficient for all proposed activities, and all financial contributors and planned allocation of funds must be identified.</p> <p>What I've gleaned from various substantiated publications the past several months, no one, including the agricultural and urban beneficiaries of the tunnels, wants to pay for this ill-conceived infrastructure project, so I encourage the fisheries agencies to refuse to issue permits that would enable it to go forward.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>
1753	4	<p>In summary, the San Francisco Bay/Sacramento/San Joaquin Delta is a mere shadow of its former self due to decades-long mismanaged water diversion practices. The BDCP focuses on diverting even more river water; therefore, it is a plan that cannot possibly restore the Delta to a healthy ecosystem.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>

DEIRS Ltr#	Cmt#	Comment	Response
			<p>As described in the response to Comment 1753-3, the action alternatives could only deliver the amount of water diverted under the existing SWP and CVP water rights and in accordance with the existing and future related regulatory requirements based upon river water levels and flow, water available in the system, the presence of threatened and endangered fish species, and water quality standards.</p> <p>As described in Chapters 1 and 2 of the Final EIR/EIS, the action alternatives were developed to reduce stresses to biological resources in the Delta. However, the alternatives were developed in accordance with the Project Objectives and Purpose and Need (see Chapter 2) to improve, but not fully restore, the Delta ecosystem.</p>
1754	1	<p>Document: EIR/EIS</p> <p>Chapter: 16 - Socioeconomics</p> <p>Key Quote/Potential Impact:</p> <p>EIR/EIS Impact Statement Executive Summary, Page ES-115</p> <p>"Impact ECON-1: Temporary Effects on Regional Economics and Employment in the Delta Region during Construction of the Proposed Water Conveyance Facilities"</p> <p>Comment:</p> <p>Alternative 4: Using IMPLAN for modeling is misleading because it cannot correctly identify the recreation components that need to be used to make educated decisions on economic impacts in the Sacramento-San Joaquin River Delta due to the water conveyance construction. IMPLAN is being used for the regional economic and employment data to inform the EIR/EIS; and per Jeffrey Michael, Professor at Eberhardt School of Business, "It is worth noting that there are well-known problems with applying a static input-output model such as IMPLAN to the types of long-run macroeconomic effects considered in this section of the Report . .</p> <p>." [footnote 2: "Review of the Bay Delta Conservation Plan Statewide Economic Impact Report, August 2013 draft," Page 14; Dr. Jeffrey Michael, Director, Business Forecasting Center, Eberhardt School of Business, University of the Pacific, December 2013. ] Either IMPLAN should be reconfigured to adequately model the full economic impacts of the Delta, including the full scope of recreation, or another model needs to be designed and implemented.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <ul style="list-style-type: none"> <li>-Loss of recreation expenditures is not in the IMPLAN which accounts for inter-county spending patterns.</li> <li>-All impacts are Adverse/Significant and Unavoidable</li> </ul> <p>Mitigation:</p> <ul style="list-style-type: none"> <li>-There is no mitigation for loss of recreational expenditures in the Sacramento-San Joaquin River Delta including as noted in above Comment 3.</li> </ul>	<p>As described in Section 16.3.1, changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified. For the purposes of this analysis, an adverse socioeconomic effect would occur when construction or operations and maintenance activities result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years. A quantified analysis is not required by CEQA nor NEPA.</p>

DEIRS Ltr#	Cmt#	Comment	Response
		<p>-There needs to be an assessment of the total number of jobs lost due to loss of recreation-oriented activities in the Delta and the number needs to be compared to the number of permanent positions provided by the BDCP (190).</p>	
1754	2	<p>Chapter: 16 - Socioeconomics</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-115</p> <p>"Impact ECON-1: Temporary Effects on Regional Economics and Employment in the Delta Region during Construction of the Proposed Water Conveyance Facilities"</p> <p>Comment:</p> <p>Alternative 4: The proposed mitigation for Agricultural employment losses is inadequate as the 190 operations and maintenance permanent jobs provided by the BDCP (EIR/EIS Page 30-43, L 29-30) in the Sacramento - San Joaquin Delta Counties is grossly insufficient to replace the significant permanent agriculture employment currently existing in the Delta. Per Table 16-8 (EIR/EIS Page 16-16) agriculture employment in 2011 was 25,100.</p> <p>Supporting Information/Assessment/Mitigation Measure(s):</p> <p>The Brattle Group Document [footnote 1: The Brattle Group's Paper "Employment Impacts for Proposed Bay Delta Water Conveyance Facility and Habitat Restoration," February 22, 2013, www.brattle.com.], Page 3: "When interpreting our results, it is important to note that the project generates most jobs during the early phase of the Plan, while job losses from agricultural land retirement increase over time as the amount of retired land increases as a consequence of restoration. The time pattern of gains and losses is significant in that we have much more confidence in the near-term job estimates than in those forecasted decades in to the future."</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>-Loss of recreation employment is not in the IMPLAN which accounts for inter-county spending patterns.</p> <p>-All impacts are Adverse.</p> <p>Mitigation:</p> <p>-There is no mitigation for loss of recreational income in the Sacramento - San Joaquin River Delta including as noted in above Comment 1.</p> <p>-There needs to be an assessment of the total number of jobs lost due to loss of recreation-oriented activities in the Delta and the number needs to be compared to the number of permanent positions provided by the BDCP (190).</p> <p>-Mitigation for loss of agricultural jobs and income is inadequate, as the tunnel will not replace the \$130 million crop value that the estimated loss of 100,000 acres would accrue yearly. This is based on the estimated \$650 million crop value for 480,000 acres of Delta irrigated acres (EIR/EIS Page 16-51, L 24-25).</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>Regarding the adequacy of proposed mitigation for adverse agricultural economic effects of construction of water conveyance facilities, please note that the summary on page ES-115 indicates that under NEPA adverse regional economic effects would remain even after implementation of mitigation. Mitigation would reduce impacts on the agricultural sector, but the impacts would remain adverse. Also, please note that permanent losses of agricultural jobs in the Delta Region as a result of project operations and maintenance-related activities are currently estimated to total 41 jobs (direct, indirect, and induced) under Alternative 4, not the 25,100 jobs cited in the comment (see Section 3.3.9, Impact ECON-7, EIR/EIS).</p> <p>As described in Section 16.3.1, changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified.</p> <p>The comment is incorrect in stating that permanent operation of water conveyance facilities would result in the permanent loss of \$130 million in crop value due to the conversion of 100,000 acres of crop land. As shown in Chapter 16, Section 3.3.9, Table 16-46, implementation of Alternative 4 is estimated to result in the permanent displacement of 4,500 acres, resulting in the annual loss of \$3.8 million in agricultural production value. Mitigation Measure AG-1, described in Chapter 14, Agricultural Resources, Section 16 14.3.3.2, Impact AG-1, would be available to reduce these effects by preserving agricultural productivity and compensating off-site.</p>

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1754	3	<p>Document: EIR/EIS Chapter: 16 - Socioeconomics</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-115</p> <p>"Impact ECON-1: Temporary Effects on Regional Economics and Employment in the Delta Region during Construction of the Proposed Water Conveyance Facilities"</p> <p>Comment:</p> <p>Alternative 4: The dewatering needed to construct the intake facilities and tunnels for Alternative 4 will create significant adverse impacts on the marinas throughout the Sacramento - San Joaquin Delta. Lack of consistent and ample water flows through the Delta will conceivably strand and/or landlock at least some, if not all, the marinas in the Delta. This holds true also with the boats and other watercraft which may be using the marinas and waterways. A study needs to be performed to analyze the impacts to the marinas and other water-based recreational businesses to determine the economic impacts. There would be approximately 10 marinas directly impacted which would be in the vicinity of the construction of the intake facilities and tunnels near Clarksburg and Walnut Grove. This would be a significant adverse impact.</p> <p>A map of the Sacramento River waterways and corresponding water levels throughout the Delta show that there is rarely an average flow that exceeds 20' in depth throughout the entire Sacramento River through the Delta. Dewatering for construction would leave little or no water in the river for recreation.</p> <p>Supporting Information/Assessment/Mitigation Measure(s):</p> <p>EIR/EIS Page 14-121, L 26-28: "Localized effects related to dewatering activities in the vicinity of intake pump stations and the expanded Clifton Court Forebay would temporarily lower groundwater levels by up to 10 feet and 20 feet, respectively."</p> <p>EIR/EIS Page 16-22, L 5-6: "The Delta recreation-related industries contribute about \$5.8 billion in annual revenues, or about 9% of revenues for all industries . . ." EIR/EIS Page 16-22, L 26-27: "As shown in Table 16-12, boating activity accounts for the largest share of total recreation-related economic contributions in the Delta." As described in the above quotes, the loss of marinas and subsequent boating recreation, will have a significant adverse impact on the recreation economy of the Delta region. Because of the importance of the recreation economy to the total economic picture of the Delta, the lack of a definitive study on the recreation economy and lack of sufficient inclusion of this data in economic studies of the Delta makes all other data incorrect and thus irrelevant. The EIR/EIS BDCP document is not viable without conclusive information.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>-The total effects of dewatering, including the economic impacts to boating recreation have not been studied or included in the EIR/EIS. We request further study of these impacts and how they will relate to the socioeconomic conditions in the Delta.</p> <p>-All impacts are Adverse/Significant and Unavoidable.</p>	<p>As discussed in Section 15.3.3, As described in Impact SW-4 in Chapter 6, Surface Water, for the preferred alternative 4A, although intakes have been designed and located on-bank to minimize changes to river flow characteristics, some localized water elevation changes would occur upstream and adjacent to each cofferdam at the intake sites due to facility location within the river. These localized surface elevation changes would not exceed an increase of 0.10 feet at any intake location even under flood flow conditions. Although minimal localized effects could occur, construction of cofferdams could impede river flows at the location of the intakes but would not increase water surface elevations upstream by more than 0.10 feet during flood events.</p> <p>Operations of Alternative 4 and the new preferred alternative, 4A, are not expected to result in a substantial decrease or increase in Delta surface water levels. Please refer to Appendix 5A, Section C, CALSIM II and DSM2 Modeling Results, EIR/EIS, for more information. For the full modeling simulation period, the Alternative 4 would result in one month during which average daily minimum water elevation would be lower when compared to Existing Conditions. Depending on the operational scenario selected, results indicate that daily minimum water surface elevations would be 0.3 feet or 0.4 feet lower on average during the month of March. However, during other months, the average daily minimum water surface elevation would increase when compared with Existing Conditions. For example, average daily minimum water elevations in September would increase by 0.9 to 1.3 feet under the proposed project, depending on which operational scenario was selected.</p> <p>For these reasons, water levels were not included in the analysis for Chapter 15, nor are marinas expected to be impacted significantly by dewatering.</p> <p>As described in Section 16.3.1, changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified. For the purposes of this analysis, an adverse socioeconomic effect would occur when construction or operations and maintenance activities result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years. A quantified analysis is not required by CEQA nor NEPA.</p>

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		<p>Mitigation:</p> <p>-There is no mitigation for loss of recreational income in the Sacramento - San Joaquin Delta for boating recreation due to low water levels from dewatering.</p> <p>-There needs to be an assessment of the total number of jobs lost due to loss of recreation-oriented activities in the Sacramento - San Joaquin Delta and the number needs to be compared to the number of permanent positions provided by the BDCP (190).</p>	
1754	4	<p>Chapter: 16 - Socioeconomics</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-115</p> <p>"Impact ECON-1: Temporary Effects on Regional Economics and Employment in the Delta Region during Construction of the Proposed Water Conveyance Facilities"</p> <p>Comment:</p> <p>Alternative 9: Changes in employment and income for recreational and tourism expenditures and their effects on regional economics and employment in the Sacramento - San Joaquin Delta have not been adequately analyzed for the temporary effects on regional economics and employment due to incomplete and omitted data. Precise conclusions cannot be drawn without complete and accurate data. Further studies to include updated information on recreation's and tourism's economic impact on the Sacramento-San Joaquin Delta needs to be developed and included in this chapter. Not only is tourism omitted entirely, but recreation data is omitted in certain cases as well. For instance, while the effects on recreational economics are specifically described on EIR/EIS Page 16-264, L 5-28, for Alternative 9, Table 16-8 Delta Counties Annual Employment and Shares by Industry, 2006-2011 (Page 16-16) does not take into account Delta recreation and tourism, employment or economics.</p> <p>In Alternative 9, Impact Econ-5 NEPA Effects on recreational economics only speak to agriculture mitigation and not to recreation and tourism operations' income lost due to water conveyance facilities construction.</p> <p>In Table 16-10 Revenues and Expenditures by Delta Counties During Fiscal Years 2010-2011 (Page 16-18) the IMPLAN model was not used to estimate employment and income changes in recreation expenditures because direct changes in recreational expenditures have not been quantified. [footnote 1: The Brattle Group's Paper "Employment Impacts for Proposed Bay Delta Water Conveyance Facility and Habitat Restoration," February 22, 2013, www.brattle.com.] [footnote 2: "Review of the Bay Delta Conservation Plan Statewide Economic Impact Report, August 2013 draft," Page 14; Dr. Jeffrey Michael, Director, Business Forecasting Center, Eberhardt School of Business, University of the Pacific, December 2013. ]</p> <p>The Delta's economy relies heavily upon agriculture, recreation and tourism.</p> <p>Recreation and tourism play a vital part in the economic stability of the Delta. Additionally, recreation and agritourism have been on the increase over the past few years since the EIR/EIS was written. This is partly due to the increasing number of wineries and wine tasting venues in the Clarksburg area. There are currently approximately 27 wineries in the</p>	<p>As described in Section 16.3.1, changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified. For the purposes of this analysis, an adverse socioeconomic effect would occur when construction or operations and maintenance activities result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years. A quantified analysis is not required by CEQA nor NEPA. Additionally, DWR is revising the Socioeconomic Impact Analysis for the project based on changes included in the RDEIR/SDEIS.</p> <p>Impacts related to regional economics, such as Impact ECON-1, would include regional employment, which would be affected by a boost or decline in tourism.</p> <p>Impacts from construction activities would be anticipated to result in a decrease in agricultural-related employment and labor income, which would be considered an adverse effect. Mitigation Measures AG-1, 1a, 1b, and 1c, described in Chapter 14, Agricultural Resources, Section 14.3.3.2, Impact AG-1, would be available to reduce these effects by preserving agricultural productivity, incorporating agricultural land stewardship plans, and compensating off-site.</p> <p>For additional information on how the EIR/EIS addresses impacts on Delta as a place, please see Master Response 24.</p>

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		<p>Sacramento River Delta Region including Bogle Winery, a well-known and international best seller. Sacramento is a 10 mile drive from the Delta wine tasting venue.</p> <p>In the past year or so, the Delta's neighbor, Sacramento, has embraced the recent trend toward appreciation of urban agriculture and agritourism. Kevin Johnson, Mayor of Sacramento, has proclaimed Sacramento as America's Farm to Fork Capital [footnote 5: <a href="http://www.sacbee.com/2013/10/30/5860288/growing-sacramentos-farm-to-fork.html">http://www.sacbee.com/2013/10/30/5860288/growing-sacramentos-farm-to-fork.html</a>]; and he declared 2013 as the "Year of Food" in this region. Elaborate Farm to Fork celebrations are scheduled for two weeks in September, 2014, with "Legends of Wine Tasting" being highlighted on 9/18. This celebration attracted 25,000 people in 2013 and is expected to reach far beyond those numbers this year. Mayor Johnson's intention is to highlight local food and farms and celebrate the region's rich, diverse agricultural bounty. This event will be held 15 minutes from the Clarksburg Wine Appellation and the 27 wine tasting venues in the Delta.</p> <p>New tourism businesses and opportunities have been developing to accommodate the interest in the local farming, wine tasting, and historical significance of the Sacramento River Delta. A Sacramento River Grown Farm Trail Map [footnote 3: <a href="http://www.sacrivertdeltagrown.org">www.sacrivertdeltagrown.org</a>] and a Tour Guide for the Delta [footnote 4: <a href="http://www.deltaheartbeattours.com">www.deltaheartbeattours.com</a>] have been designed and distributed for easy access to tourists to enjoy this rich, diverse area.</p> <p>A current example of nationwide interest in the Sacramento - San Joaquin Delta agriculture includes a tour scheduled for 45 farming students from the University of Nebraska during August, 2014. Recently, 38 retired school teachers from the Sacramento area toured the wineries and legacy towns of Locke and Walnut Grove. The Sacramento - San Joaquin River Delta Region is a sought after place that people enjoy for water recreation sports as well as land tourism opportunities.</p> <p>Supporting Information/Assessment</p> <p>EIR/EIS Page 16-162, L 8-13: "NEPAEffects: Because construction of water conveyance facilities would result in an increase in construction-related employment and labor income, this would be considered a beneficial effect.</p> <p>However, these activities would also be anticipated to result in a decrease in agricultural-related and labor income, which would be considered an adverse effect. Mitigation Measure AG-1, described in Chapter 14, Agricultural Resources, Section 14.3.3.2, Impact AG-1, would be available to reduce these effects by preserving agricultural productivity and compensating off-site."</p> <p>EIR/EIS Page 16-264, L 5-35: "NEPAEffects: Under Alternative 9, three recreational facilities would be permanently displaced and 5 three others would be temporarily but directly or indirectly disturbed during construction, as 6 described in Chapter 15, Recreation, Section 15.3.3.16, Impacts REC-1 through REC-4. Construction 7 of Alternative 9 facilities would result in displacement and permanent loss of recreation facilities 8 including the Walnut Grove public guest dock, Boathouse Marina, and the Boon Dox guest dock in 9 Walnut Grove. Additionally, the quality of recreational activities including boating, fishing, 10 waterfowl hunting, and hiking in the Delta could be indirectly affected by noise, lighting, traffic, and 11 visual degradation in proximity to water conveyance construction. Recreation areas anticipated to 12 experience temporary or indirect effects include Delta Meadows State Park, Brannan Island State 13 Recreation Area, Sherman Island, Delta Meadows River</p>	

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		<p>Park, Stone Lakes National Wildlife Refuge, 14 Cosumnes River Preserve, Dagmar's Landing, Deckhands Marine Supply, Landing 63, Walnut Grove 15 Marina, Bullfrog Landing &amp; Marina, Union Point Marina Bar &amp; Grill, and Clifton Court Forebay.</p> <p>Construction of water conveyance structures under this alternative would be anticipated to result in a lower-quality recreational experience in a number of localized areas throughout the Delta, despite the implementation of mitigation measures, including enhancement of fishing access sites and incorporation of recreational access into project design, and environmental commitments, including providing funding to implement recreational improvements and control aquatic weeds, providing notification of maintenance activities in waterways and developing and implementing a noise abatement plan, as described in Appendix 3B, Environmental Commitments. With a loss of recreational facilities and a decrease in recreational quality, the number of visits would be anticipated to decline, at least in areas closest to construction activities. The multi-year schedule and geographic scale of construction activities and the anticipated decline in recreational spending would be considered an adverse effect. The commitments and mitigation measure cited above would contribute to the reduction of this effect.</p> <p>CEQA Conclusion: Construction of the proposed water conveyance facilities under Alternative 9 would be anticipated to impact recreational revenue through the loss of recreational facilities and a decrease in recreational quality. Fewer visits would be anticipated to result in decreased economic activity related to recreational activities. This section considers only the economic effects of recreational changes brought about by construction of the proposed water conveyance facilities. Potential physical changes to the environment relating to recreational resources are described and evaluated in Chapter 15, Recreation, Section 15.3.3.16, Impacts REC-1 through REC-4."</p> <p>EIR/EIS Page 16-20, L 32-36: "The recreation-oriented focus of the Delta leads to an interdependent relationship between the different businesses. Fishing guides and boaters depend on the marinas for supplies and fuel. Marinas without food services rely on local food markets or restaurants to serve visitors. Restaurants and wineries depend on hotels to provide accommodations for overnight or extended visits. All the businesses depend on visitors and tourists spending time and money in the Delta."</p> <p>EIR/EIS Page 16-22, L 23-27: "Recreation-oriented activities in the Delta were estimated to contribute approximately \$236.3 million in direct expenditures in 2010. These direct expenditures are expected to grow to approximately \$256 million by 2020, \$269.9 million by 2025, and \$375.4 million by 2060. As shown in Table 16-12, boating activity accounts for the largest share of total recreation- related economic contributions in the Delta."</p> <p>EIR/EIS Page 16-43, L 28-32: "Changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified."</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <ul style="list-style-type: none"> <li>-Loss of recreation expenditures is not in the IMPLAN which accounts for inter-county spending patterns.</li> <li>-Loss of tourism due to construction noise, air quality and visual aesthetics in close proximity to Legacy Towns and their historic value is not adequately considered and</li> </ul>	

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		<p>addressed in the Socioeconomic Chapter of the EIR/EIS.</p> <p>-All impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>-There needs to be an assessment of the total number of jobs lost due to loss of recreation-oriented activities in the Delta and the number needs to be compared to the number of permanent positions provided by the BDCP.</p> <p>-Mitigation for loss of agricultural jobs and income is inadequate, as the tunnel will not replace the \$130 million crop value that the estimated loss of 100,000 acres would accrue yearly. This is based on the estimated \$650 million crop value for 480,000 acres of Delta irrigated acres (EIR/EIS Page 16-51, L 24-25).</p> <p>-A study of the loss of recreation and tourism and their related economics and employment is requested to be completed to determine the effects of the lost potential income to the Delta and its related businesses as it relates to the overall water conveyance construction and activities. See second supporting paragraph below to identify lost recreational income sources.</p>	
1754	5	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment 4:</p> <p>Alternative 4: Long term reduction of recreational opportunities due to construction of conveyance facilities (CMI). Construction of the Alt. 4 conveyance facilities would adversely impact well-established recreational and tourism opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p> <p>With the economic downturn that began in 2008 and continues to this day, the Sacramento-San Joaquin River Delta has begun to play a much more significant role in the recreational portfolio of those living near, and within, its borders. Not only are many incomes remaining stationary or dropping, but food and gas prices are steadily rising with increasing inflation.</p> <p>With gas prices fluctuating around \$4 per gallon, which significantly increases the cost of lengthy road trips, many Northern Californians are looking for recreational opportunities that are nearby.</p> <p>Sacramentans and San Franciscans are looking increasingly to the Sacramento-San Joaquin River Delta to provide the extensive recreational experiences sought after by those wishing to escape the hectic city environment of these large metropolitan areas, and turn to a more rural experience. And, with less discretionary income, the recreational opportunities offered by the Delta Region are being sought after as they offer meaningful recreation and tourism at an affordable price.</p>	<p>The proposed project may impact recreational opportunities including impacts on hunting, fishing, swimming, and boating. Mitigation is proposed to reduce these impacts; however some impacts may remain significant due to the long-term nature of the temporary construction related impacts. Please see Chapter 15, Recreation, and Section 4.3.11 for more detail on the impacts of the proposed project on recreational opportunities and the proposed mitigation.</p> <p>Chapter 16, Socioeconomics, Sections 16.3.3.2 through 16.3.3.16, discuss tourism and recreation as economic drivers in the Delta region and how the potential effects of the alternatives on recreation opportunities discussed in this chapter could affect regional economics, community character, local government fiscal conditions, and recreation economics as a result of constructing, operating and maintaining the proposed water conveyance facilities and conservation measures. The reader is referred to Chapter 16, Socioeconomics, Sections 16.3.3 through 16.3.3.16, for further discussion of this topic. While tourism and recreation are closely related, this EIR/S discussed tourism in Chapter 16 rather than Chapter 15.</p>

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		<p>The physical location of the Sacramento-San Joaquin River Delta, with its 1,100 miles of sloughs and waterways, is significant. It is flanked on the north by Sacramento, California's State Capital, and on the South by the San Francisco Bay Area. Both of these large metropolitan areas benefit recreationally because of their close proximity to the Delta.</p> <p>The northern Sacramento-San Joaquin River Delta is literally in Sacramento's backyard, within a mere 15-minute drive to California's State Capitol in downtown Sacramento. This greater metropolitan area supports approximately 2 million people. The southern Delta is an approximately 45 - 60 minute drive from the greater San Francisco Bay Area, which, according to the bayareavision.org website, comprises 7,000 square miles, nine counties, 101 cities, and 7.1 million residents. The San Francisco Bay Area is the fifth most populous metropolitan area in the United States. [footnote 1: "The San Francisco Bay Area, located in Northern California, consists of nine counties, 101 cities, and comprises 7,000 square miles. All of the region's nine counties share the San Francisco Bay. With 7.1 million residents, the San Francisco Bay Area is the fifth most populous metropolitan area in the United States." ]</p> <p>Although tourism is not expanded upon in the EIR/EIS BDCP documents regarding the benefits and added value it provides to the recreation industry in the Sacramento-San Joaquin River Delta, tourism plays a significant role in Delta recreation and economics. Some of the recreational and tourism opportunities in the Delta include:</p> <ul style="list-style-type: none"> <li>-Wine tasting (25% of California's wine grapes come from the Delta, special appellations of the Delta include Clarksburg and Lodi)</li> <li>-Historical tours</li> <li>-Boating</li> <li>-Kayaking</li> <li>-Wind surfing</li> <li>-Fishing</li> <li>-Agri-tourism</li> <li>-Special cultural and community events</li> </ul> <p>The Sacramento-San Joaquin Delta's recreational significance is mirrored in the abundance of visitors throughout the year. Per the Socioeconomics Chapter 16 "The Delta provides approximately 7.4 million visitor-days of recreational use (Plater and Wade 2002). Based on state population growth trends, it was estimated that Delta visitation could reach 11.8 million visitor days by 2060." (Page 16-21, L 19-22)</p> <p>The EIR/EIS does not take into account the recreational opportunities in the Sacramento-San Joaquin River Delta and its close proximity to two major metropolitan areas in light of the current world-wide economic downturn. There needs to be a study to research, evaluate and determine the role the Delta plays in the extension of recreational opportunities for residents of Sacramento and the San Francisco Bay Area for day trips and weekend outings.</p> <p>Additional studies should be compiled to determine how the State and National economic climate is impacting recreation and tourism in the Sacramento-San Joaquin River Delta. This</p>	

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		<p>also needs to be compared to other trends of recreational and tourist activity country-wide.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>The close proximity of the two large metropolitan areas of Sacramento and the San Francisco Bay Area as well as the impacts of the current economic climate are not adequately discussed, thus all potential impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>Mitigation is not adequate to address potential recreation and tourism impacts on the two large metropolitan communities on the northern and southern borders of the Sacramento-San Joaquin River Delta.</p>	
1754	6	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-3: Result in Long-Term Reduction of Recreation Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities</p> <p>Comment:</p> <p>Although REC-3 refers to reduction of recreation navigation opportunities as a result of constructing the proposed water conveyance facilities, the only impact that was addressed was from construction of the intake facilities, not the tunnels. There needs to be a study to determine what the effect will be from the dewatering needed to construct the tunnels and what impact that will have on the flow of the Sacramento River. Will the dewatering needed for construction of the tunnels impact the flow of the Sacramento River? If so, to what extent and for how long? How will this affect the boating recreation in the Delta? How will this affect other water-related recreation in the Delta?</p> <p>How will transportation of the muck with disposal of many truckloads per day affect recreation in the Delta?</p> <p>How will the impaired aesthetics of staging and storage of muck affect recreation in the Delta?</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <ul style="list-style-type: none"> <li>-Does not consider effect of dewatering for construction of tunnels on water levels of the Sacramento River and subsequent effect on boating and other water-related recreation.</li> <li>-Does not consider effect of muck from tunnel construction in the aesthetics and convenience of recreation in the Delta.</li> <li>-This impact is adverse/significant and unavoidable.</li> </ul> <p>Mitigation:</p> <p>As tunnel construction is not addressed as an impediment to Recreational activities in the</p>	<p>All of these items are discussed in Chapter 15, under a variety of impact headers. Underground tunnel construction is not expected to affect recreational activities. Although dewatering would take place 7 days a week for 24 hours per day, it would not result in adverse noise effects. While RTM areas are considered permanent surface impacts for the purposes of impact analysis, it is anticipated that the RTM would be removed from these areas and reused, as appropriate, as bulking material for levee maintenance, as fill material for habitat restoration projects, or other beneficial means of reuse identified for the material, as described in Appendix 3B, Environmental Commitments. Permanent noise and visual impacts would occur from RTM areas. Chapter 17, Aesthetics and Visual Resources, Section 17.3.3.9, identifies a number of mitigation measures that would be available to address construction-related visual effects on sensitive receptors. In addition, the chapter identifies measures to address longer term visual effects associated with changes to the landscape/visual setting from construction and the presence of new water conveyance features. DWR would also make a commitment to enhance the visual character of the area by creating new wildlife viewing sites and enhancing interest in the construction site by constructing viewing areas and displaying information about the project, which may attract people who may use the recreation facilities to the construction site as part of the visit.</p>

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1754	7	<p>Delta, no mitigation is offered.</p> <p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-3: Result in Long-Term Reduction of Recreation Navigation Opportunities as a Result of Constructing the Proposed Water Conveyance Facilities</p> <p>Comment:</p> <p>In the NEPA Effects section, the recreational boating impacts of construction of the proposed water conveyance facilities has been inadequately addressed and described. This section only takes into account boating concerns in the direct areas of intake and tunnel construction. While it is acknowledged that "direct effects on boat passage and navigation on the Sacramento River would result from construction of the intakes" (Page 15-266, L 23-24), impact on boating access is underestimated as is stated "boat passage volume along the corridor of the Sacramento River where intakes are proposed is low." (Page 15-266, L 26-27) Even with this limited assessment of the effects, they are still, however, considered adverse. "... This could still result in a reduction of recreational navigational opportunities would be considered adverse because, although temporary, the effects would be long-term, lasting more than 2 years." (Page 15-266, L 33-35) However, the full impact is not being recognized or addressed. With the dewatering of the Delta needed for the construction of the water conveyance facilities, it is expected to lower the water table between 10 - 20 feet. "Localized effects related to dewatering activities in the vicinity of intake pump stations and the expanded Clifton Court Forebay would temporarily lower groundwater levels by up to 10 feet and 20 feet, respectively. The pumping plants would be located just east of the Sacramento River, south of Freeport and north of Courtland." (Page 14-121, L 26-29) This would seriously affect the water levels in the Sacramento River below the pumping stations. A Fish-n-Map Co. map of the Delta waterways and the corresponding water levels throughout the Delta show that there is rarely an average flow that exceeds twenty feet in depth (an average of 18 feet from Clarksburg to Walnut Grove) along the entire flow of the Sacramento River through the Delta. (See attached Fish-n-Map Co. map.) Dewatering for construction will lower the water levels to a less than adequate 8 feet for a large portion of the recreational boating and associated boating-related facilities in the Delta. This could land-lock larger water vessels and boating marinas. Because of the extended timeframe of 4-8 years of construction, this could bankrupt many marinas and boating-related businesses. (See attached California Delta Boaters Map and Visitors Guide by the California Delta Chamber of Commerce.)</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>-Did not consider effect of dewatering on water levels of the Sacramento River and subsequent effect on boating and other water-related recreation.</p> <p>-This impact is adverse/significant and unavoidable.</p> <p>Mitigation:</p> <p>Proposed mitigation is irrelevant. "TRANS- I a: Implement site-specific construction traffic</p>	<p>As described in Impact SW-4 in Chapter 6, Surface Water, for the preferred alternative 4A, although intakes have been designed and located on-bank to minimize changes to river flow characteristics, some localized water elevation changes would occur upstream and adjacent to each cofferdam at the intake sites due to facility location within the river. These localized surface elevation changes would not exceed an increase of 0.10 feet at any intake location even under flood flow conditions. Although minimal localized effects could occur, construction of cofferdams could impede river flows at the location of the intakes but would not increase water surface elevations upstream by more than 0.10 feet during flood events.</p> <p>Operations of Alternative 4 and the new preferred alternative, 4A, are not expected to result in a substantial decrease or increase in Delta surface water levels. Please refer to Appendix 5A, Section C, CALSIM II and DSM2 Modeling Results, EIR/EIS, for more information. For the full modeling simulation period, the Alternative 4 would result in one month during which average daily minimum water elevation would be lower when compared to Existing Conditions. Depending on the operational scenario selected, results indicate that daily minimum water surface elevations would be 0.3 feet or 0.4 feet lower on average during the month of March. However, during other months, the average daily minimum water surface elevation would increase when compared with Existing Conditions. For example, average daily minimum water elevations in September would increase by 0.9 to 1.3 feet under the proposed BDCP, depending on which operational scenario was selected.</p> <p>For these reasons, water levels were not included in the analysis for Chapter 15.</p>

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		management plan." (Page ES-112) Reduction in, and lack of, water for water recreation is not adequately mitigated.	
1754	8	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4 and Alternative 9: Long term reduction of recreational opportunities due to construction of conveyance facilities (CM1). Construction of the Alt. 4 conveyance facilities would adversely impact well-established recreational opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p> <p>The full importance of the Sacramento-San Joaquin River Delta Legacy Towns is not being recognized and the Delta Legacy Towns are not being protected as is required by the Delta Plan and the Delta Reform Act of 2009. These towns are pivotal in formation of California's early history. This important contribution is being ignored and these towns are in jeopardy of being eliminated through the proposed construction of the water conveyance facilities. This is in direct conflict with what is in the Delta Plan.</p> <p>The June 2012 Delta Stewardship Council Newsletter article "Legacy Communities Help Define the Delta" states: "The Delta Stewardship Council (Council) envisions a future where the Delta's unique qualities are recognized and honored, including the attributes of the Delta's historic towns.</p> <p>Chapter 5 of the final draft of the Delta Plan includes policies and recommendations to protect and enhance the unique character and values of the Delta. Chapter 7 deals with reducing risk to people, property, and State interests in the Delta. Walnut Grove and Locke are examples of two of the earliest modern-day settlements along the Sacramento River. They are two of the legacy communities in the Delta with a rich past and vibrant culture, which can capitalize on "heritage tourism" as a means for economic development.</p> <p>Socioeconomics Chapter 16 states "Heritage tourism in the Delta occurs in small historic towns along the Sacramento River that developed as steamboat landings during the Gold Rush. Freeport, Clarksburg, Hood, Courtland, Locke, Walnut Grove, Ryde, Isleton and Rio Vista are all considered legacy towns." (Page 16-21, L 10-12) It also states "Heritage tourism involves traveling to experience an area's historic, cultural, and natural resources (National Trust for Historic Preservation 2010). Examples include visits to historic sites, national and state parks, museums, festivals, and other cultural events (D. K.Shiflett and Associates 2000)." (Page 16-21, L 7-9)</p> <p>The Recreation Chapter, under Visiting Historic Sites (Page 15-7, L 1-11), states that "The Delta has a long and varied history of human use and, therefore, has many historic sites, several of which are associated with legacy towns, such as Isleton, Locke, and Walnut Grove. (The term "legacy town" is applied to several small, historic towns along the Sacramento</p>	<p>The proposed project may impact recreational opportunities including impacts on hunting, fishing, swimming, and boating. Mitigation is proposed to reduce these impacts; however some impacts may remain significant due to the long-term nature of the temporary construction related impacts. Please see Chapter 15, Recreation, and Section 4.3.11 for more detail on the impacts of the proposed project on recreational opportunities and the proposed mitigation.</p> <p>Chapter 16, Socioeconomics, Sections 16.3.3.2 through 16.3.3.16, discuss tourism and recreation as economic drivers in the Delta region and how the potential effects of the alternatives on recreation opportunities discussed in this chapter could affect regional economics, community character, local government fiscal conditions, and recreation economics as a result of constructing, operating and maintaining the proposed water conveyance facilities and conservation measures. The reader is referred to Chapter 16, Socioeconomics, Sections 16.3.3 through 16.3.3.16, for further discussion of this topic. While tourism and recreation are closely related, this EIR/S discussed tourism in Chapter 16 rather than Chapter 15.</p> <p>Please also refer to Master Response 31 regarding compliance with the Delta Reform Act.</p>

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		<p>River in the Delta that were originally established as riverboat ports.) Self-guided walks, available in both Locke and Walnut Grove, take visitors past old sites and buildings, including residences, a market, gambling museum, blacksmith shop, butcher shop, and bank. Visitors can stop at historic sites in the Delta year-round. DPR [Department of Parks and Recreation] and the Sacramento Housing and Redevelopment Agency have restored a former Chinese immigrant boarding house in Locke to preserve its history (Reyman Construction 2011). The project also includes a visitor's center and interpretative exhibits within the boarding house (Locke Foundation 2012)."</p> <p>Not only will valuable tourism opportunities be lost with construction of the water conveyance facilities, but a significant part of California's history will be jeopardized and compromised with the loss of the Legacy Towns and their agrarian settings for the experiential education for all future generations.</p> <p>Supporting Information/Assessment:</p> <p>-The Delta Reform Act of 2009 designated a number of unincorporated legacy communities in the Delta including Freeport, Clarksburg, Courtland, Hood, Locke, Walnut Grove, Isleton, and Rio Vista, as well as Bethel Island and Knightsen. These communities exemplify the Delta's unique cultural history and contribute to the sense of the Delta as a place. They enjoy colorful history, and coupled with the river recreation and wine tasting region, this area is the next tourism draw for the Sacramento area.</p> <p>-The Delta Reform Act of 2009, 85021: "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. 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>-The goals of the Bay Delta Conservation Plan are "providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The co-equal 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."</p> <p>-Delta Stewardship Newsletter, June 2012 states: Legacy Communities Help Define the Delta</p> <p>The California Delta is a unique place distinguished by its diverse geography, vibrant natural resources, rich agriculture and legacy communities. The Delta Stewardship Council (Council) envisions a future where the Delta's unique qualities are recognized and honored, including the attributes of the Delta's historic towns.</p> <p>Chapter 5 of the final draft of the Delta Plan includes policies and recommendations to protect and enhance the unique character and values of the Delta. Chapter 7 deals with reducing risk to people, property, and State interests in the Delta.</p> <p>Walnut Grove and Locke are examples of two of the earliest modern-day settlements along the Sacramento River. They are two of the legacy communities in the Delta with a rich past and vibrant culture, which can capitalize on "heritage tourism" as a means for economic development.</p>	

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		<p>In 1970, the Sacramento County Historical Society added Locke to the national registry of historic places as the only town in the U.S. built exclusively by the Chinese for the Chinese.</p> <p>The Delta Plan incorporates many of the recommendations in the Delta Protection Commission's Economic Sustainability Plan (ESP), which notes the importance of enhancing the legacy themes of the Delta's historical communities, and creating better awareness of them. The ESP recommends improving legacy towns' lodging and entertainment; restoring historic buildings; and promoting context-sensitive infill development.</p> <p>The final staff draft Delta Plan recommends the Delta be named a National Heritage Site to protect its status as a unique and special place in California.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>There is no significant mention to the losses to tourism, nor mitigation offered to address recreational and tourism impacts particularly in relationship to the Sacramento-San Joaquin Legacy Towns, thus all impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>-Mitigation is not adequate to address impacts on all recreation in the Delta, including tourism and agritourism, especially as it relates to the loss of the historical aspects of the Legacy Towns.</p> <p>-There is no mitigation offered for loss of recreational income and historical Legacy Towns with the construction of the proposed water conveyance facilities.</p>	
1754	9	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4: Long term reduction of recreational opportunities due to construction of conveyance facilities (CM1). Construction of the Alt. 4 conveyance facilities would adversely impact well-established recreational opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p> <p>The data used to evaluate recreation in the Sacramento-San Joaquin River Delta is either missing, inadequate, or outdated. Many of the tables of fundamental aspects of Delta recreation reflect data from sources that goes back 10-15 years or more. For example, EIR/EIS Table 15-2 "Summary of Public and Private Delta Recreational Facilities by County" (EIR/EIS Page 15-7) references the Delta Protection Commission 1997, 2006 as its sources and EIR/EIS Table 15-3 "Estimates of Boating, Fishing and Day Use in the Delta" (EIR/EIS Page 15-20) is using data from 1997. As recreation is central to the Delta economy and cultural significance, current up-to-date studies of all the different aspects of recreation and tourism in the Delta need to be conducted to accurately identify and assess the individual benefits and scope of these recreational activities - and their subsequent value and</p>	<p>The proposed project may impact recreational opportunities including impacts on hunting, fishing, swimming, and boating. Mitigation is proposed to reduce these impacts; however some impacts may remain significant due to the long-term nature of the temporary construction related impacts. Please see Chapter 15, Recreation, and Section 4.3.11 for more detail on the impacts of the proposed project on recreational opportunities and the proposed mitigation.</p> <p>Every effort has been made to include the most recent and relevant information to this analysis. Chapter 15 uses the most recent information available; however, these sources have not been updated since the referenced study dates.</p>

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		<p>synergistic relationships to the greater Delta communities.</p> <p>Recent research and compilation of this information is needed to develop an accurate evaluation and assessment of what the true impacts of construction of the water conveyance facilities will be on recreation and tourism in the Sacramento-San Joaquin River Delta. The financial effects that construction of the proposed water conveyance facilities will have on recreation in the Delta have also not been adequately addressed in the EIR/EIS. The lack of adequate and up-to-date data invalidates the results and conclusions presented in the Recreation Chapter 15. Up-to-date, expanded and more inclusive studies are critical to present defensible and authoritative conclusions within the BDCP's EIR/EIS.</p> <p>Also, meaningful data on tourism in the Delta is absent from Recreation Chapter 15. There is significant agritourism in the North Sacramento-San Joaquin River Delta through the numerous local wineries. Clarksburg appellation boasts nearly 25 wineries, and is a key producer of wine grapes in California.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>Inadequate or missing background information and data do not allow the credible development of educated conclusions as to the designations of the impacts for either CEQA or NEPA.</p> <p>Mitigation:</p> <p>Background material is inferior and inadequate for drawing conclusions for mitigation as the foundational data is outdated and incomplete.</p>	
1754	10	ATT1: Table 15-2. Summary of Public and Private Delta Recreational Facilities by County 22.	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.
1754	11	ATT2: Table 15-3. Estimates of Boating, Fishing, and Day Use in the Delta 31	Same as response 10 above.
1754	12	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4: Long term reduction of recreational opportunities due to construction of conveyance facilities (CM1). Construction of the Alt. 4 conveyance facilities would adversely impact well-established recreational and tourism opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p> <p>Tourism in the Delta is not expanded upon in the EIR/EIS, and only peripherally alluded to in Recreation Chapter #16. Additionally, agritourism is rarely mentioned. These are serious omissions that need to be addressed in the document. Tourism, particularly in the northern part of the Delta is pivotal and growing exponentially. In the past three years at least three</p>	<p>The proposed project may impact recreational opportunities including impacts on hunting, fishing, swimming, and boating. Mitigation is proposed to reduce these impacts; however some impacts may remain significant due to the long-term nature of the temporary construction related impacts. Please see Chapter 15, Recreation, and Section 4.3.11 for more detail on the impacts of the proposed project on recreational opportunities and the proposed mitigation.</p> <p>Chapter 16, Socioeconomics, Sections 16.3.3.2 through 16.3.3.16, discuss tourism and recreation as economic drivers in the Delta region and how the potential effects of the alternatives on recreation opportunities discussed in this chapter could affect regional economics, community character, local government fiscal conditions, and recreation economics as a result of constructing, operating and maintaining the proposed water conveyance facilities and conservation measures. The reader is referred to Chapter 16, Socioeconomics, Sections 16.3.3 through 16.3.3.16, for further discussion of this topic. While tourism and recreation are closely related, this EIR/S discussed tourism in Chapter 16 rather than Chapter 15.</p> <p>For additional information regarding Delta as a Place, please see Master Response number 24.</p>

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		<p>new tourist businesses have established roots in the Northern Sacramento-San Joaquin River Delta. They are Discover the Delta (<a href="http://www.discoverthedelta.org">www.discoverthedelta.org</a>), Delta Heartbeat Tours (<a href="http://www.deltaheartbeattours.com">www.deltaheartbeattours.com</a>) and the Sacramento River Delta-Grown Farm Trail (<a href="http://www.sacriverdeltagrown.org">www.sacriverdeltagrown.org</a>).</p> <p>Tourism historically, and to this day, has played a vital role in Sacramento-San Joaquin River Delta recreation and economics. Tourism showcases the Delta's well-rounded opportunity for people to come out and enjoy the water, tour the wineries, enjoy the rural agrarian atmosphere, visit museums, and shop in the quaint legacy towns which feature local artisans.</p> <p>Recreation and agritourism have been on the increase over the past few years, and since the EIR/EIS was written. This is partly due to the increasing number of wineries and wine tasting venues in the Clarksburg area. Clarksburg, in fact has its own wine appellation (see additional information below). There are approximately 25 wineries in the Sacramento River Delta Region including Bogle Vineyards, a well-known and international bestseller. (See below information.) Other Clarksburg Wineries include: Carvalho Family Wines, Heringer Estates, R. Merlo at the Old Sugar Mill, Scribner Bend Vineyards, Wilson Vineyards, Clarksburg Wine Company, Draconis, Due Vigne di Famiglia, Ehrhardt Estates Winery, Rendez-Vous Winery, River Grove Winery, Scribner Bend Vineyards, Three Wine Company, Todd Taylor Wines, Twisted Rivers, Wilson Vineyards, Miner's Leap Winery, Tierra del Rio Vineyards, Dancing Coyote Wines, Six Hands Winery, Watts Winery, Benson Ferry Winery, Gramds Amis Winery, and Elevation Ten.</p> <p>The agrarian ambiance of the Clarksburg Appellation will be seriously compromised by the construction, blight, noise, poor air quality and by turning this adjacent area to the Appellation into an industrial water complex. The construction for Alternative 4 will be visually noticeable to winery tour and agritourism visitors, as it is directly across the Sacramento River from the Bogle Winery.</p> <p>With Sacramento's location being a mere 10 miles from the Sacramento-San Joaquin River Delta, and with its recent Farm to Fork Capital recognition, the Delta's new Sacramento River Grown Farm Trail is drawing Sacramentans, Bay Area residents, and other tourists nationwide to visit the Delta. This current emphasis on the Delta's agritourism, along with its legacy town historical focus, has been enhanced by contemporary land maps have been designed and distributed to help visitors navigate this unique Delta Region with its hundreds of miles of recreational sloughs and waterways.</p> <p>A current example of nationwide interest in the Sacramento-San Joaquin River Delta includes a tour for 45 livestock and farming students from the University of Nebraska, which has been scheduled for August 9, 2014. The Delta Region is a sought after place that people enjoy for water recreation sports as well as land tourism and agritourism opportunities.</p> <p>The Sacramento County and Yolo County Plans are also supportive of tourism and agritourism. The Socioeconomic Chapter 16.2.3.2 (Page 16-35, L 25) describes one of the strategic objectives of the economic development element that was included as part of the 2011 update to the Sacramento County General Plan to "Promote agriculture and agritourism." The Socioeconomic Chapter 16.2.3.5 (Page 16-37, L 27-29) goes on to include Policy CC-2.4 from the Yolo County General Plan, which states "Where appropriate, include economic development in the unincorporated communities that serves intra-county and regional tourism."</p>	<p>Please review Master Response 18 regarding Agricultural impacts as well as the Final EIR/EIS, Chapter 14.</p>

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		<p>Recreation is not assessed and evaluated in its totality in the BDCP EIR/EIS. The approach of singling out only certain aspects of recreation in the Sacramento-San Joaquin River Delta, and evaluating these individually is inadequate. Both general tourism as well as agritourism are insufficiently addressed in Recreation Chapter 16. Current, up-to-date, and extensive studies are needed to effectively evaluate the total holistic picture of recreation and tourism in the Delta. Special attention should be paid to how tourism is affected by the Delta's legacy towns of Freeport, Clarksburg, Courtland, Hood, Walnut Grove, Ryde, Locke, Isleton, and Rio Vista, and how the tourism industry will be adversely impacted by the construction of the water conveyance facilities.</p> <p>Supporting Information/Assessment</p> <p>EIR/EIS Page 16-21, L 10-12: The Socioeconomics Chapter 16 states "Heritage tourism in the Delta occurs in small historic towns along the Sacramento River that developed as steamboat landings during the Gold Rush. Freeport, Clarksburg, Hood, Courtland, Locke, Walnut Grove, Ryde, Isleton and Rio Vista are all considered legacy towns."</p> <p>EIR/EIS Page 16-20, L 32-36: "The recreation-oriented focus of the Delta leads to an interdependent relationship between the different businesses. Fishing guides and boaters depend on the marinas for supplies and fuel. Marinas without food services rely on local food markets or restaurants to serve visitors. Restaurants and wineries depend on hotels to provide accommodations for overnight or extended visits. All the businesses depend on visitors and tourists spending time and money in the Delta."</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>Mitigation is not adequate to address the serious impacts that construction of the water conveyance facilities will have on recreation and tourism in the Sacramento-San Joaquin River Delta, thus all impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>Mitigation is not adequate to address impacts on all recreation in the Delta, including tourism and agritourism due to incomplete and inadequate data in the content of the EIR/EIS.</p>	
1754	13	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4: Long term reduction of recreational opportunities due to construction of conveyance facilities (CMI). Construction of the Alt. 4 conveyance facilities would adversely impact well-established recreational opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p>	<p>For the purposes of this analysis, "long term" is classified as any impact lasting more than two years. Impacts to a number of recreation facilities related to construction would last longer than two years. Mitigation, wherever feasible, has been included to reduce as many impacts as possible. Unfortunately, this impact would remain significant and unavoidable. Regarding adequacy of mitigation measures, please refer to Master Response 22. Analysis on recreation-related socioeconomic impacts can be found in Chapter 16, Socioeconomics, Section 16.1.1.6, Economic Character of Recreation in the Delta.</p>

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		<p>Supporting Information/Assessment:</p> <p>Construction-related impacts on informal fishing access sites along the east/west bank of the Sacramento River in vicinity of proposed intakes would be considered significant and unavoidable because construction would alter the river bank and/or restrict access in such a fashion to make these sites unusable.</p> <p>EIR/EIS Page 15-255, L 31-33. Six recreation sites or areas are within the 1,200 to 1,400 foot indirect impact associated with aboveground construction of the new water conveyance facilities.</p> <p>-EIR/EIS Page 15-257, L 2-4. Indirect construction noise effect on recreation in the vicinity of the Clarksburg Boat Launch facility across the river from the proposed Intake 3 site would last about 5 years, with construction of the intake and related facilities taking place Monday -Friday for up to 24 hours each day. There are few public boat launches in the Delta recreational area between Rio Vista and Freeport on the Sacramento River, therefore this would significantly impact the boating and fishing recreation.</p> <p>-EIR/EIS Page 15-256, L 5-14 and L 21-22. Stone Lakes National Wildlife Refuge could experience adverse effects on wildlife viewing and environmental education opportunities due to proximity to the noise of construction works areas borrow/spoils sites as well as adversely impacting nesting birds and waterfowl populations, including greater sandhill cranes.</p> <p>-EIR/EIS Page 15-258, L 20-22 and 26-32. Wimpy's Marina is within the noise and visual disturbance impact area and is across the river from a tunnel corridor, a vent shaft, a temporary tunnel work area, a temporary access road, and a temporary transmission line. The 230 kV temporary transmission line construction could take up to 3.5 years, during which time marina users would be disturbed by noise and visual disruptions related to the construction activities. Anglers on the river near the marina and across from the construction area would also experience adverse impacts from the noise and visual disturbances of the construction. The tunnel construction and use of the temporary work area would take up to 8 years and would be considered a long-term adverse effect.</p> <p>-EIR/EIS Page 15-258, L 37-40. Westgate Landing Park would be used to house reusable tunnel material (muck) for up to 8 years during tunnel construction and would adversely affect the recreation experience of visitors across the river due to noise and visual disturbances. Construction would primarily take place Monday through Friday, for up to 24 hours per day.</p> <p>-EIR/EIS Page 15-257, L 22-23 and L 29-30. Cosumnes River Preserve would experience construction noise if the east-west permanent transmission line is implemented. Disruption would be for up to 3.5 years.</p> <p>-EIR/EIS Page 15-259, L 20-24. Bullfrog Landing Marina on Middle River is southeast of the terminus of permanent access road to ventilation/access shaft for the tunnel/pipeline alignment across Bacon Island. Noise and visual disruptions related to the construction activities could affect marina users and anglers.</p> <p>Construction activities could last up to 8 years, resulting in a long-term adverse effect.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p>	

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		<p>All impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>-Loss of recreational opportunities and the quaint agrarian pastoral ambiance of the Delta, which is one of its signature features, cannot be mitigated through the proposed mitigations. These mitigations are inadequate.</p> <p>-There is no mitigation for loss of recreational income in the Delta including as noted in above Comment 1.</p>	
1754	14	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-115</p> <p>REC-1: Permanent displacement of existing well-established public use or private commercial recreation facility available for public access as a result of the location of the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4: The assertion under NEPA Effects that "the location of the proposed water conveyance facilities would not result in the permanent displacement of existing well-established public use or private commercial recreation facilities" (Page 15-254, L 38-40) is inaccurate. Recreation-oriented businesses and other commercial recreation facilities in the immediate vicinity of the construction of the water conveyance facilities will suffer severe and adverse impacts to the recreation industry. The NEPA Effects are taking into account only a fraction of the public use or private commercial recreation facilities that will be impacted by the construction. For instance, the construction of the Intake Facility #3 will displace the majority of the town of Hood.</p> <p>Supporting Information/Assessment:</p> <p>-EIR/EIS Page 16-48, L 16-19: "Changes related to recreational economics. For the purposes of this analysis, an adverse socio-economic effect would occur when construction or operations and maintenance activities result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years."</p> <p>-EIR/EIS Page 16-20, L 32-36: "The recreation-oriented focus of the Delta leads to an interdependent relationship between the different businesses. Fishing guides and boaters depend on the marinas for supplies and fuel. Marinas without food services rely on local food markets or restaurants to serve visitors. Restaurants and wineries depend on hotels to provide accommodations for overnight or extended visits. All the businesses depend on visitors and tourists spending time and money in the Delta."</p> <p>"NEPA Effects: Because construction of water conveyance facilities would result in an increase in construction-related employment and labor income, this would be considered a beneficial effect. However, these activities would also be anticipated to result in a decrease in agricultural-related and labor income, which would be considered an adverse effect. Mitigation Measure AG-1, described in Chapter 14, Agricultural Resources, Section 14.3.3.2, Impact AG-1, would be available to reduce these effects by preserving agricultural</p>	<p>The statement that the construction of the intake facility would displace a majority of the town of Hood is untrue. Alternatives 4 and 4A (the new preferred alternative) would include transmission lines and an underground tunnel around the outside of the town, as described in Chapter 15. As discussed in Chapter 13, Land Use, for Alternatives 4 and 4A, construction of permanent facilities and associated work areas would be located around the community of Hood. A tunnel carrying water south from Intakes 2 and 3 to the intermediate forebay would be placed under the community. The tunnel would be constructed below the surface and would not interfere with the existing community. A temporary power line would be constructed around the northern, eastern, and southern sections of the community. Additionally, a temporary work area associated with construction of the conveyance facilities would be built adjacent to Hood on the southern side of the community. Construction and the long-term placement of Intakes 3 and 5, although not adjacent to Hood, would be built about one-quarter mile north and one-half mile south of Hood, respectively, and would substantially alter the lands to the north and south of the community.</p> <p>As described under Impact REC-1 for Alternative 4A, the post-construction location of the water conveyance facilities would not result in permanent displacement of well-established recreation facilities available for public access. Therefore, there would be no adverse effects.</p> <p>While closely related, tourism, recreation-related private businesses, and public recreation facilities are all separate resources. Please refer to Chapter 16, Socioeconomics, for the impacts to tourism and economy, including private businesses.</p>

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		<p>productivity and compensating off-site."</p> <p>EIR/EIS Page 16-20, L 32-36: "The recreation-oriented focus of the Delta leads to an interdependent relationship between the different businesses. Fishing guides and boaters depend on the marinas for supplies and fuel. Marinas without food services rely on local food markets or restaurants to serve visitors. Restaurants and wineries depend on hotels to provide accommodations for overnight or extended visits. All the businesses depend on visitors and tourists spending time and money in the Delta."</p> <p>EIR/EIS Page 16-22, L 23-27: "Recreation-oriented activities in the Delta were estimated to contribute approximately \$236.3 million in direct expenditures in 2010. These direct expenditures are expected to grow to approximately \$256 million by 2020, \$269.9 million by 2025, and \$375.4 million by 2060. As shown in Table 16-12, boating activity accounts for the largest share of total recreation-related economic contributions in the Delta."</p> <p>EIR/EIS Page 16-43, L 28-32: "Changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified."</p>	
1754	15	<p>Comment:</p> <p>Alternative 4 and Alternative 9: The proposed mitigation for Agricultural employment losses is inadequate as the 190 operations and maintenance permanent jobs provided by the BDCP (EIR/EIS Page 30-43, L 29-30) in the Delta Counties is grossly insufficient to replace the significant permanent agriculture employment currently existing in the Delta. Per Table 16-8 (EIR/EIS Page 16-16) agriculture employment in 2011 was 25,100.</p> <p>Supporting Information/Assessment/Mitigation Measure(s):</p> <p>The Brattle Group Document [footnote 1: The Brattle Group's Paper "Employment Impacts for Proposed Bay Delta Water Conveyance Facility and Habitat Restoration, February 22, 2013, www.brattle.com.], Page 3: "When interpreting our results, it is important to note that the project generates most jobs during the early phase of the Plan, while job losses, from agricultural land retirement increase over time as the amount of retired land increases as a consequence of restoration. The time pattern of gains and losses is significant in that we have much more confidence in the near-term job estimates than in those forecasted decades in to the future."</p>	<p>The EIR/EIS analyzes all alternatives, including Alternative 4A.</p> <p>As described in Impact ECON-7 of Alternative 4A, during operation and maintenance of the conveyance facilities, up to 11 direct/39 total agriculture jobs are expected to be lost. However, up to 129 direct/183 total jobs are expected to be generated from operations and maintenance of the project. Similarly, impacts from construction are described in Impact ECON-1. This discussion shows that the number of jobs generated during construction (a peak of 2,427 in year 3) far exceeds the 16 direct/57 total agricultural jobs lost during that time period.</p>
1754	16	<p>Comment:</p> <p>Alternative 4 and Alternative 9: The dewatering needed to construct the intake facilities and tunnels for both Alternative 4 and Alternative 9 will create significant adverse impacts on the marinas throughout the Delta. Lack of consistent and ample water flows through the Delta will conceivably strand and/or landlock at least some, if not all, the marinas in the Delta. This holds true also with the boats and other watercraft which may be using the marinas and waterways. A study needs to be performed to analyze the impacts to the marinas and other water-based recreational businesses to determine the economic impacts. There would be approximately 10 marinas directly impacted which would be in the vicinity of the construction of the intake facilities and tunnels near Clarksburg and Walnut Grove. This would be an adverse impact.</p>	<p>Groundwater levels and dewatering would not be related to a change in surface water flows that would affect marinas. Operations of Alternative 4 and the new preferred alternative, 4A, are not expected to result in a substantial decrease or increase in Delta surface water levels. Please refer to Appendix 5A, Section C, CALSIM II and DSM2 Modeling Results, EIR/EIS, for more information. Section C.29 reports changes in the monthly averaged daily minimum elevation of the Sacramento River at Freeport (see tables beginning on page 5A-C1106). Results for each alternative are presented by month, probability of exceedance, and by water year type. Results are also presented in comparison to Existing Conditions and the No Action Alternative. The modeling results for the future No Action Alternative indicate that water levels may continue to change as climate change occurs within the Delta.</p> <p>For the full modeling simulation period, the Alternative 4 would result in one month during which average daily minimum water elevation would be lower when compared to Existing Conditions. Depending on the operational scenario selected, results indicate that daily minimum water surface elevations would be 0.3 feet or 0.4 feet lower on average during the month of March. However, during other months, the average</p>

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		<p>Supporting Information/Assessment/Mitigation Measure(s):</p> <p>EIR/EIS Page 14-121, L 26-28: "Localized effects related to dewatering activities in the vicinity of intake pump stations and the expanded Clifton Court Forebay would temporarily lower groundwater levels by up to 10 feet and 20 feet, respectively."</p> <p>Per EIR/EIS Table 15-15 Recreation Sites Potentially Affected by Construction of Alternative 4, Wimpy's Marina (Page 15-253, L 13) is listed, but no other impacted marinas are identified. Other potentially impacted marinas include Snug Harbor Resort, Deckhands Marina, Walnut Grove Marina, New Hope Landing, Boat House Marina, Hidden Harbor, and Dagmar's among others. Please update Table 15-15 (Page 15-253, L 13) to include all impacted marinas and water-based recreational businesses and sites.</p> <p>EIR/EIS Page 16-22, L 5-6: "The Delta recreation-related industries contribute about \$5.8 billion in annual revenues, or about 9% of revenues for all industries . . ." EIR/EIS Page 16-22, L 26-27: "As shown in Table 16-12, boating activity accounts for the largest share of total recreation-related economic contributions in the Delta." As described in the above quotes, the loss of marinas and subsequent boating recreation, will have a significant adverse impact on the recreation economy of the Delta region. Because of the importance of the recreation economy to the total economic picture of the Delta, the lack of a definitive study on the recreation economy and lack of sufficient inclusion of this data in economic studies of the Delta makes all other data incorrect and thus irrelevant. The EIR/EIS BDCP document is not viable without inclusion of this information.</p>	<p>daily minimum water surface elevation would increase when compared with Existing Conditions. For example, average daily minimum water elevations in September would increase by 0.9 to 1.3 feet under the proposed project, depending on which operational scenario was selected.</p>
1754	17	<p>Comment:</p> <p>Using IMPLAN for modeling is misleading because it cannot correctly identify the recreation components that need to be used to make educated decisions on economic impacts in the Delta due to the water conveyance construction. IMPLAN is being used for the regional economic and employment data to inform the EIR/EIS and per Jeffrey Michael, Professor at Eberhardt School of Business, "It is worth noting that there are well-known problems with applying a static input-output model such as IMPLAN to the types of long-run macroeconomic effects considered in this section of the Report . . ." [footnote 2: "Review of the Bay Delta conservation Plan Statewide Economic Impact Report, August 2013 draft," Dr. Jeffrey Michael, Page 14, last sentence.] Either IMPLAN should be reconfigured to adequately model the full economic impacts of the Delta, including the full scope of recreation, or another model needs to be designed and implemented.</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>-Loss of recreation employment is not in the IMPLAN which accounts for inter-county spending patterns.</p> <p>-All impacts are Adverse.</p> <p>Mitigation:</p> <p>-There is no mitigation for loss of recreational income in the Delta including as noted in above Comment 1.</p> <p>-There needs to be an assessment of the total number of jobs lost due to loss of recreation-oriented activities in the Delta and the number needs to be compared to the</p>	<p>As described in Section 16.3.1, changes in employment and income associated with changes in recreation expenditures were not estimated using a regional IMPLAN model because direct changes in recreational expenditures have not been quantified. For the purposes of this analysis, an adverse socioeconomic effect would occur when construction or operations and maintenance activities result in loss of public access to or public use of well-established recreation facilities or activities lasting for more than 2 years. A quantified analysis is not required by CEQA nor NEPA</p> <p>Impacts from construction activities would be anticipated to result in a decrease in agricultural-related employment and labor income, which would be considered an adverse effect. Mitigation Measures AG-1, 1a, 1b, and 1c, described in Chapter 14, Agricultural Resources, Section 14.3.3.2, Impact AG-1, would be available to reduce these effects by preserving agricultural productivity, incorporating agricultural land stewardship plans, and compensating off-site.</p>

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		<p>number of permanent positions provided by the BDCP (190).</p> <p>-Mitigation for loss of agricultural jobs and income is inadequate, as the tunnel will not replace the \$130 million crop value that the estimated loss of 1 00,000 acres would accrue yearly. This is based on the estimated \$650 million crop value for 480,000 acres of Delta irrigated acres (EIR/EIS Page 16-51, L 24-25).</p>	
1754	18	<p>Chapter: 15-Recreation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Impact Statement Executive Summary, Page ES-112</p> <p>REC-2: Result in long-term reduction of recreation opportunities and experiences as a result of constructing the proposed water conveyance facilities.</p> <p>Comment:</p> <p>Alternative 4 and Alternative 9: Long term reduction of recreational opportunities due to construction of conveyance facilities (CM1). Construction of the Alt. 4 and Alt. 9 conveyance facilities would adversely impact well-established recreational and tourism opportunities and experiences in the area because of access, noise, and visual setting disruptions that could result in loss of public use.</p> <p>The vital role the Sacramento-San Joaquin River Delta has played in the history of the formation of California is not adequately highlighted and evaluated in the Recreation Chapter. It is mentioned briefly in the Socioeconomics Chapter as well as the Recreation Chapter, but not extensively in either one. This is a serious omission as the nine Legacy Towns are at the heart of California's history from the Gold Rush era to the present time. These are iconic towns, which need to be preserved and treasured for their historical value - and they are the towns that are most at risk of adverse impacts from the construction of the proposed water conveyance facilities, particularly the intake facilities proposed in Alternatives 4 and 9.</p> <p>As these towns are in the North Delta, and the North Delta is where the main water conveyance facilities will be located, via Alternatives 4 and 9, these communities will either be directly eliminated (i.e. Hood), or the conveyance facility structures will destroy the historical ambiance by turning nearby areas into industrial construction zones during the initial approximate 1 0-year construction period, and massive concrete industrial water complexes following the construction (i.e. Walnut Grove, Clarksburg, Locke, etc.). This will compromise the traditional historical and legacy qualities that these towns represent, and thus eliminate a fundamental aspect of California's early history.</p> <p>What has not been adequately represented in the Recreation chapter is that the Sacramento- San Joaquin River Delta is the heart of the history of California. These Legacy towns are the cornerstones of California's historical foundations dating back to the 1849 Gold Rush and California's adoption of Statehood in 1850. Walnut Grove, Freeport, Courtland, Clarksburg, and Isleton all date back to the mid-1800's.</p> <p>Recreation is not looked at in its totality. The approach of singling out only certain aspects of recreation in the Sacramento-San Joaquin River Delta, and evaluating these individually is inadequate. Particularly missing is full evaluation of the rich cultural heritage of the Delta, as</p>	<p>It is untrue that Alternatives 4 and 9 would eliminate the community of Hood. Alternatives 4 and 4A (the new preferred alternative) would include transmission lines and an underground tunnel around the outside of the town, as described in Chapter 15. As discussed in Chapter 13, Land Use, for Alternatives 4 and 4A (the new preferred alternative), construction of permanent facilities and associated work areas would be located around the community of Hood. A tunnel carrying water south from Intakes 2 and 3 to the intermediate forebay would be placed under the community. The tunnel would be constructed below the surface and would not interfere with the existing community. A temporary power line would be constructed around the northern, eastern, and southern sections of the community. Additionally, a temporary work area associated with construction of the conveyance facilities would be built adjacent to Hood on the southern side of the community. Construction and the long-term placement of Intakes 3 and 5, although not adjacent to Hood, would be built about one-quarter mile north and one-half mile south of Hood, respectively, and would substantially alter the lands to the north and south of the community. Under Alternative 9, the construction of permanent facilities and associated work areas would be located in close proximity of the communities of Walnut Grove and Locke, displacing numerous structures in the communities and creating construction zones that would cross portions of the communities.</p> <p>As described in Chapter 15 in Section 15.3.3, Chapter 16, Socioeconomics, Sections 16.3.3.2 through 16.3.3.16, discuss tourism and recreation as economic drivers in the Delta region and how the potential effects of the alternatives on recreation opportunities discussed in this chapter could affect regional economics, community character, local government fiscal conditions, and recreation economics as a result of constructing, operating and maintaining the proposed water conveyance facilities and conservation measures. The reader is referred to Chapter 16, Socioeconomics, Sections 16.3.3 through 16.3.3.16, for further discussion of this topic. While tourism and recreation are closely related, this EIR/S discussed tourism in Chapter 16 rather than Chapter 15.</p> <p>Additionally, all feasible mitigation has been included wherever possible to lessen impacts.</p> <p>Please also refer to Chapter 18, Cultural Resources, regarding the cultural significance of and impacts to these communities.</p> <p>With regard to cultural resources assessment, please see Master Response 20.</p>

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		<p>well as its pivotal role in the exploration, development, and settlement of California.</p> <p>Extensive studies are needed to evaluate the total holistic picture of recreation and tourism in the Sacramento-San Joaquin River Delta. Especially how it is affected by the Legacy Towns of Freeport, Clarksburg, Courtland, Hood, Walnut Grove, Locke, Ryde, Rio Vista and Isleton. A study of the loss of recreation and its related businesses is requested to be completed to determine the effects of the lost recreation and tourism industry and income to the Sacramento-San Joaquin River Delta as it relates to the overall water conveyance construction and activities.</p> <p>Supporting Information/Assessment</p> <p>-EIR/EIS Page 16-21, L 7-9: The Socioeconomics Chapter 16 states "Heritage tourism involves traveling to experience an area's historic, cultural, and natural resources (National Trust for Historic Preservation 2010). Examples include visits to historic sites, national and state parks, museums, festivals, and other cultural events (D. K.Shiflett and Associates 2000)."</p> <p>Socioeconomics Chapter 16 EIR/EIS Page 16-21, L 10-12 also states: "Heritage tourism in the Delta occurs in small historic towns along the Sacramento River that developed as steamboat landings during the Gold Rush. Freeport, Clarksburg, Hood, Courtland, Locke, Walnut Grove, Ryde, Isleton and Rio Vista are all considered legacy towns."</p> <p>-The Recreation Chapter, under Visiting Historic Sites (Page 15-7, L 1-11), states that "The Delta has a long and varied history of human use and, therefore, has many historic sites, several of which are associated with legacy towns, such as Isleton, Locke, and Walnut Grove. (The term "legacy town" is applied to several small, historic towns along the Sacramento River in the Delta that were originally established as riverboat ports.) Self-guided walks, available in both Locke and Walnut Grove, take visitors past old sites and buildings, including residences, a market, gambling museum, blacksmith shop, butcher shop, and bank. Visitors can stop at historic sites in the Delta year-round. DPR [Department of Parks and Recreation] and the Sacramento Housing and Redevelopment Agency have restored a former Chinese immigrant boarding house in Locke to preserve its history (Reyman Construction 2011). The project also includes a visitor's center and interpretative exhibits within the boarding house (Locke Foundation 2012)."</p> <p>-The Delta Reform Act of 2009 designated a number of unincorporated legacy communities in the Delta including Freeport, Clarksburg, Courtland, Hood, Locke, Walnut Grove, Isleton, and Rio Vista, as well as Bethel Island and Knightsen. These communities exemplify the Delta's unique cultural history and contribute to the sense of the Delta as a place. They enjoy colorful history, and coupled with the river recreation and wine tasting region, this area is the next tourism draw for the Sacramento area.</p> <p>-The goals of the Bay Delta Conservation Plan are "providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The co-equal 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."</p> <p>Impacts not Correct or not Identified and Impact Designations:</p> <p>-There is negligible mention of the extreme historical value of the Legacy Towns in the Sacramento-San Joaquin River Delta. These towns are the cornerstones of California's historical foundations dating back to the 1849 Gold Rush and California's adoption of Statehood in 1850. Walnut Grove, Freeport, Courtland, Clarksburg, and Isleton all date back</p>	

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		<p>to the mid-1800's.</p> <p>-Mitigation does not satisfactorily address impacts to the Legacy Towns and other tourist locations, thus all impacts are Adverse/Significant and Unavoidable.</p> <p>Mitigation:</p> <p>-Mitigation is not adequate to address impacts on all recreation in the Sacramento-San Joaquin River Delta, including tourism and agritourism, and does not sufficiently and effectively address the loss of tourism, historical significance and other recreational aspects related to the Legacy Towns of the Delta.</p> <p>-There is no mitigation for loss of recreational and tourism income in the Sacramento-San Joaquin River Delta with the construction of the proposed water conveyance facilities.</p>	
1754	19	<p>Document: EIR/EIS Chapter: 19-Transportation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Executive Summary Trans-2, page ES-121 and Table 19-7 :</p> <p>TRANS-2: Increased construction vehicle trips exacerbating unacceptable pavement conditions</p> <p>Comments/Questions (Including Inadequacies, Contradictions, Unidentified Impacts, Incomplete Information, etc.):</p> <p>Comment:</p> <p>During construction of Alt. 4, load-bearing trucks would damage roadway surfaces, contributing to deterioration of existing pavement conditions to a less than acceptable threshold on a total of 43 roadway segments identified in Table 9-7 (pages 19-37 to 19-39). In addition, damage to roadway pavement is expected to occur throughout the study area (Figure 9-4, page) on various local and state roads, as well as on a few interstates. If use of physically deficient roadways cannot be avoided or limited, it may be necessary to improve the deficient roadways identified in Table 19-26 (pages 19-177 to 19-180), or make other necessary infrastructure improvements before construction to make them suitable for use during construction.</p>	<p>Table 19-10 of Chapter 19, Transportation, identifies roadway segments that are deficient. Mitigation Measures TRANS-2a, b, and c seek to eliminate or reduce traffic on those segments or to improve the condition of those pavement sections if use cannot be avoided. However, the proponents realize that this may not be feasible for all segments. Mitigation Measure TRANS-2c also includes remediation of roads to their condition prior to project construction, or better. Mitigation Measure TRANS-2c also includes coordination with affected agencies to accomplish this objective.</p>
1754	20	<p>Comment:</p> <p>Although Mitigation Measures TRANS-2a through TRANS-2c would reduce the severity, but not necessarily to less than significant levels, as BDCP proponents cannot ensure that the agreements or encroachment permits will be obtained from the relevant transportation agencies. This is a significant and unavoidable impact. (Page 19-164.)</p> <p>-Prior to construction, BDCP proponents will make a "good faith" effort to enter into Mitigation Agreements with affected state, regional, or local agencies to verify the location, extent, timing, and "fair share" cost to be paid by the BDCP proponents for any necessary pre- and post-construction physical improvements. Mitigation Measure TRANS-2a thru TRANS-2c are available to reduce this effect, but not necessarily to a level that would not be adverse because BDCP proponents cannot ensure that agreements or encroachment permits will be obtained from the relevant transportation agencies, so impact is significant</p>	<p>See Master Response 22, Mitigation, Environmental Commitments, Avoidance and Minimization Measures, and Alternative-Specific Environmental Commitments and Responses to Comments 1606-60, 1785-148, 1676-119, and 1676-124. The Lead Agencies agree with the commenter's concern about obtaining fair and effective agreement to make improvements to affected segments when use of such segments by construction traffic cannot be avoided or minimized. The proponents want to ensure that agreements are fair to all parties involved. Mitigation Measure TRANS-2c specifies a good faith effort to enter into mitigation agreements. The proponents will work in good faith and are optimistic that workable agreements will be reached.</p> <p>Please refer to the Final EIR/EIS, Chapter 3, Appendix 3B for mitigation and environmental commitments.</p>

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		<p>and unavoidable if can't obtain.</p> <p>-This borders on extortion to condition BDCP proponent's financial responsibility for mitigation of damage caused by their project on whether a local government agency signs a Mitigation Agreement. To avoid the costs of mitigation of their impacts, all BDCP proponents have to do is declare the local agency didn't negotiate in "good faith" and therefore couldn't reach agreement, leaving full financial burden on local government for BDCP's project damage.</p> <p>-Per Table 19-1 (pages 19-2 to 19-6) of the 83 total identified roadway study segments 42 are in Sacramento County. Table 19-5 (pages 19-15 to 19-21) identifies that 41 of those 42 roadway study segments in Sacramento County are already LOS. Should the scenario in the above paragraph play out, this will cause extreme hardship and place a severe financial burden on Sacramento County.</p>	
1754	21	<p>Document: EIR/EIS Chapter: 19-Transportation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Executive Summary Trans-3, page ES-121 and Table 19-7 :</p> <p>TRANS-3: Increase in safety hazards, including interference with emergency routes during construction</p> <p>Comments/Questions (Including Inadequacies, Contradictions, Unidentified Impacts, Incomplete Information, etc.):</p> <p>Comment:</p> <p>Increase in roadway safety hazards and interference with emergency routes during conveyance construction. Alternative 4 would require a heavy volume of materials to be hauled to and from construction work zones, increases potential for vehicle accidents due to the increased amount of heavy trucks using the local roads and highways, creating conflicts with: recreational and commuter traffic; farming operations; and emergency service vehicles and response times. If an improvement identified in the TRANS- 1 c Mitigation Agreement is not fully funded and constructed before the project's contribution to the increased safety hazard is made, then impact is significant and unavoidable. (Pages 19-183, lines 22-28.)</p> <p>Supporting Information/Assessment/Mitigation Measure(s):</p> <p>-Narrow levee roads -no room to pull over. References to Transportation Management Plans to address narrow levee roads are listed on pages 19-173 to 19-175 in the event of emergency vehicles on the roadway. However no mention is made of how to address accommodations for transportation of agricultural equipment and school busses that need to pick up children at their homes. Roadways are often used by agricultural trucks and haulers, including tractors of various sizes, to get from field to field, to transport crops and produce, as well as to move spraying equipment. School busses in the areas of construction in the Primary Zone historically pick up and drop off children at their homes on school days.</p> <p>-Plan should identify how many construction trucks will be added to roads on a daily basis.</p>	<p>EIR/EIS Chapter 19, Transportation, page 19-36 identifies interference with emergency services as an effect. Impact TRANS-3 further discusses this issue. Mitigation Measure TRANS-1a includes provisions to ensure that construction vehicles allow continual access for emergency vehicles at the time of an emergency. Mitigation Measure TRANS-1c also seeks to work with affected jurisdictions to enhance capacity of congested roadway segments where construction traffic will substantially affect transportation facilities. However, some significant impacts may be unavoidable as discussed on page 19-70 of EIR/EIS Chapter 19, Transportation.</p>

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		<p>-Local agriculture equipment can't compete with large construction vehicles.</p> <p>-Increased traffic volumes, particularly with wide trucks on narrow levee roads, increase the risk of car accidents and fatalities.</p> <p>-Mitigation needs to be identified regarding school bus stops and safety of children.</p>	
1754	22	<p>Document: EIR/EIS</p> <p>Chapter: 19-Transportation</p> <p>Key Quote/Potential Impact:</p> <p>EIS/EIR Executive Summary Trans-1, page ES-121:</p> <p>TRANS-1: Increased construction vehicle trips resulting in unacceptable Level Of Service (LOS) conditions</p> <p>Comments/Questions (Including Inadequacies, Contradictions, Unidentified Impacts, Incomplete Information, etc.):</p> <p>Comment:</p> <p>(Table 19-3, pages 19-8 to 19-12 and Table 19-25, pages 19-165 to 19-172.)</p> <p>The number of vehicles generated by construction activities under Alt. 4 would exacerbate already unacceptable traffic flows by exceeding acceptable traffic volume levels on 33 roadway segments for at least one hour between 6:00 a.m. and 7:00 p.m., thereby exacerbating already unacceptable conditions. This is an adverse and significant and unavoidable impact. MITIGATION: In order to reduce the disruption created by the construction of multiple intakes at one time, I request that you reduce the construction to one intake built at a time and tested first before constructing any additional intakes - and only add more intakes if all limits are met.</p>	<p>The Lead Agencies will ensure development of site-specific construction traffic management plans (TMPs) that address the specific steps to be taken before, during, and after construction to minimize traffic impacts, including the mitigation measures and environmental commitments identified in the Final EIR/EIS.</p> <p>The Lead Agencies will also ensure that the TMPs are implemented prior to beginning construction at a site, including in-water construction sites. If necessary to minimize unexpected operational impacts or delays experienced during real-time construction, the Lead Agencies will also be responsible for modifying the traffic management plan to reduce these effects.</p> <p>The construction schedule for Alternative 4A is described in Appendix 3C, Construction Assumptions for Water Conveyance Facilities, of the Final EIR/EIS.</p>
1754	23	<p>Comment:</p> <p>(Page 19-164, lines 23-26)</p> <p>The highest concentration of roadway segments to have traffic volumes exceeded include: SR-12; I-80; SR-4; I-205; as well as thresholds being exceeded on several local roadways and all segments studied in West Sacramento.</p> <ul style="list-style-type: none"> <li>•-(Page 19-164, lines 33-38)</li> </ul> <p>Although Mitigation Measures TRANS- 1a through TRANS- 1c would reduce the severity, BDCP proponents are not solely responsible for the timing, nature, or complete funding of required improvements. This is an adverse and significant and unavoidable impact.</p> <p>--It is likely BDCP proponents will make a "good faith" effort to enter into Mitigation Agreements with affected state, regional, or local agencies to verify the location, extent, timing, and "fair share" cost to be paid for "capacity enhancements" to the identified roadway segments in Table 19-9 (pages 19-55 to 19-59). BDCP proponents will only be responsible for their "fair share costs" of all "feasible capacity-expanding" improvements</p>	<p>See Master Response 22, Mitigation, Environmental Commitments, Avoidance and Minimization Measures, and Alternative-Specific Environmental Commitments and Responses to Comments 1606-60, 1785-148, 1676-119, 1676-124, and 1754-20. The proponents want to ensure that agreements are fair to all parties involved Mitigation Measure TRANS-1c specifies a good faith effort to enter into mitigation agreements. The proponents will work in good faith and are optimistic that workable agreements will be reached.</p>

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		<p>determined to be "necessary, feasible, and available." If an improvement identified in any Mitigation Agreement(s) contemplated by Mitigation Measure TRANS-1e (page ES-121) is not fully funded and constructed before the project's contribution to the effect is made, the impact would be adverse and significant and unavoidable. (Page 19-164, lines 33-38 and page 19-175, lines 12-40 and page 19-176, lines 1-35.)</p> <p>--This possibly borders on extortion to withholding mitigation for the project's impacts unless the county signs a Mitigation Agreement committing them to pay for a portion of roadway improvements that would not be needed or occurring, if not for the increased "capacity" created by CMI conveyance construction truck volume. By definition "capacity-expanding physical improvements" are only need in order to accommodate the increased traffic volume of BDCP construction trucks and is therefore 100% financial responsibility of BDCP proponents. To avoid the costs of mitigation of their impacts, all BDCP proponents have to do is declare the local agency didn't negotiate in "good faith" and therefore couldn't reach agreement, leaving full financial burden on local government for BDCP's project damage.</p> <p>--Per Table 19-5 (pages 19-15 to 19-21), there are 113 total identified roadway study segments and per Table 19-5 (pages 19-15 to 19-21) 83 of those segments are already deficient.</p> <p>--Per Table 19- 1 (pages 19-2 to 19-6) of the 83 total identified roadway study segments 42 are in Sacramento County. Table 19-5 (pages 19-15 to 19-21) identifies that 41 of those 42 roadway study segments in Sacramento County already exceed LOS. Should the scenario in the above paragraph play out, this will cause extreme hardship and place a severe financial burden on Sacramento County.</p> <p>MITIGATION: A study should be made which identifies the cost for fixing each of the 83 roadways in each County and delineate each County's financial obligations, so there will be a clear accounting of the total financial obligation of each roadway project per County as well as identify the approximate fiduciary responsibility to the BDCP for these roadway improvements.</p>	
1754	24	<p>-Plan should provide greater specificity of impact</p> <p>-Plan should identify how many construction trucks will be added to roads on a daily basis.</p> <p>-Adverse/Significant and Unavoidable</p>	<p>EIR/EIS Chapter 19, Transportation, and Appendix 19A, Bay Delta Conservation Plan Construction Traffic Impact Analysis, outline the segment-by-segment impacts of construction traffic on level of service and pavement condition for each alternative. The attachments to Appendix A provide hourly roadway volumes for the worst-case analysis discussed in Chapter 19.</p>
1755	1	<p>Historically, the Delta estuary as a whole has been a highly productive ecosystem, producing millions of metric tons of fish and shellfish, with its vast food web supporting a rich variety of marine and freshwater wildlife. At one time, the four runs of salmon that pass through the Delta alone numbered in the millions annually. The water quality of the Delta is naturally influenced by inflows of fresh water and tidally-driven mixing of seawater from the west with freshwater inflows. This mingling of fresh and salt water in the Delta creates an ecosystem unique for its size and diversity of species -- roughly 738,000 acres support more than 750 species of plants and animals, some of which, like the delta smelt, are unique only to the Delta. Over 50 different species of fish and 380 animal species, mostly birds, call the Delta home.</p> <p>In addition to still being the gateway for hundreds of thousands of salmon and steelhead that spawn in the streams of the Central Valley and Sierra, the Delta is a critical link in the</p>	<p>This comment contains an opinion on the past and current value of the Delta ecosystem to marine and freshwater wildlife, including fish. It also incorporates by reference the comments of the Migratory Bird Conservation Partnership, which have been responded to separately. Please refer to table of comments for the response to the Migratory Bird Conservation Partnership. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>Pacific Flyway for migratory birds (Herbold and Moyle 1989). It should be noted that physical changes in the Delta, the availability of water and agricultural practices have attracted some wildlife in greater abundance today, underscoring the importance of wildlife-friendly farming practices as part of the Delta's future. This also underscores the importance of enhancing freshwater marsh habitat around the Delta as part of the BDCP strategy to preserve and expand habitat for migratory birds. [Footnote 4: The Nature Conservancy incorporates by reference the comments of the Migratory Bird Conservation Partnership on the Draft Bay Delta Conservation Plan Environmental Impact Report, submitted to Ryan Wulff, National Marine Fisheries Service, on July 29, 2014.]</p> <p>Today's radically altered Delta ecosystem has just a fraction of wetland and river habitat, converted to farmland and housing developments, and what remains is compromised by reduced connectivity, water supply operations, invasive species and pollution. In particular, the systematic 'de-linking' of land and water in the Delta, converting marsh habitat into a series of islands separated by well-channelized waterways has fundamentally altered the natural landscape of the Delta. With these factors in mind, many scientists have warned that a catastrophic crash of the Delta's food web is likely and may already be occurring (Lund et al. 2007).</p>	
1755	2	<p>Over the decades, water quality in the Delta has been heavily influenced by human activity well above the Delta. Managing flows for multiple purposes while meeting water quality standards and export pumping needs has significantly altered Delta salinity patterns. The Delta is a naturally dynamic ecosystem, with natural daily and seasonal shifts in salinity that are important for maintaining its native diversity. However, direct exports and upstream diversions have significantly altered these patterns so that at times, waters of the western Delta are either fresher or more saline than they would be under more natural conditions. In addition, the operation of the massive State Water Project and Central Valley Project pumps in the south Delta routinely alter the natural flow pattern through the Delta. Water quality in the Delta will continue to be influenced by these factors, and also change substantially with sea level rise, permanent island failures, and changes in water and land management.</p> <p>Pressures on the Delta associated with sea level rise, climate change, earthquakes, land subsidence, and flooding will ultimately make water exports from the Delta impractical, if not impossible with the current physical configuration of the Delta. The California Department of Water Resources (DWR) has estimated that a disruption of water exports from the Delta caused by flooding due to major levee failures could amount to a \$30-to-\$40 billion loss to the state's economy (DWR 2009). [Footnote 5: <a href="http://www.water.ca.gov/floodsafe/fessro/levees/drms/phase1_information.cfm#">http://www.water.ca.gov/floodsafe/fessro/levees/drms/phase1_information.cfm#</a>] A study and report released by the Public Policy Institute of California (PPIC) in 2007, and since updated, has concluded that an isolated conveyance system offers the best potential for meeting the co-equal objectives of Delta ecosystem recovery and water supply reliability (Lund et al. 2007).</p>	<p>This comment is consistent with information presented in Chapter 2, Project Objectives and Purpose and Need, in the Final EIR/EIS. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>
1755	3	<p>The Nature Conservancy's Engagement in the Bay Delta Conservation Plan and Our Objectives for Successful Ecological Restoration in the Delta:</p> <p>It is in this context that The Nature Conservancy has supported the concept of the BDCP, with its proposed alternate conveyance facility combined with extensive ecosystem restoration. While the siting of any large infrastructure project is complex with many issues to consider, our comments are directly focused on the ecological goals that have been</p>	<p>The commenter provides a context for TNC's involvement in land management and conservation in the Delta. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>articulated for the BDCP.</p> <p>TNC is a strong advocate for large-scale restoration of unique habitat conditions in the Delta necessary for ecological functionality, while ensuring reliable water supplies for people. We have invested significant resources in the BDCP because it is our view that in this moment, the BDCP or an equivalent Plan is an essential component for reversing a steady decline in the Delta ecosystem, and reconciling ecosystem recovery and statewide water resources management.</p> <p>In addition to working in the Delta as a conservation organization, TNC also is an active landowner of Delta islands. TNC owns McCormack-Williamson Tract and Staten Island, both of which are managed to achieve ecological objectives, and TNC has been protecting and implementing restoration of riparian habitats on the Cosumnes River Preserve on the eastern edge of the Delta for decades. At McCormack-Williamson Tract, TNC has led efforts to restore riparian and intertidal wetland habitat in collaboration with multiple partners, including the Department of Fish and Wildlife, the Department of Water Resources, UC Davis, and the San Francisco Estuary Institute. At Staten Island, for more than 20 years TNC has led integrated conservation efforts in wildlife-friendly farming practices essential for the preservation of sandhill cranes -- about 15% of the Central Valley Greater Sandhill Crane subspecies winter there. TNC thus is well versed in the challenges and complexity of attempting -- much less achieving -- comprehensive ecosystem restoration efforts in the Delta. TNC's dual role in the Delta gives us a unique perspective in the management, science, and integrated resource planning necessary for Delta restoration efforts to succeed.</p> <p>TNC's wider vision and aspirations for Delta restoration efforts within the scope of BDCP are founded on the following priorities:</p> <ol style="list-style-type: none"> <li>1. Achieving Delta flows that mimic natural flow characteristics, including increased freshwater flows (from both the Sacramento and San Joaquin Rivers) into and through the Delta, and which deliver more natural seasonal and inter-annual variability;</li> <li>2. Rebuilding natural diversity and resilience of the Delta ecosystem;</li> <li>3. Expanding floodplain connectivity and functionality throughout the eastern, southern, and northern Delta;</li> <li>4. Restoring natural intertidal and wetland function in Suisun Marsh;</li> <li>5. Augmenting seasonal and managed wetlands habitat for a diversity of migratory birds in and around the Delta;</li> <li>6. Restoring freshwater tidal wetlands in a manner that ensures no net loss of freshwater wetland habitat, an increasingly important element of Pacific Flyway viability in California;</li> <li>7. Expanding implementation of wildlife-friendly agricultural management practices on existing croplands;</li> <li>8. Improving central and south Delta floodplain habitat and/or bypass facilities;</li> <li>9. Reducing impacts of urban and commercial development;</li> <li>10. Improving Delta flows through integration of new operations and facilities, including a</li> </ol>	

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		<p>peripheral tunnel designed and operated to reduce stress on the Delta ecosystem;</p> <p>11. Supporting a comprehensive science program that informs adaptive management actions; and</p> <p>12. Establishing an independent and competent governance structure that can effectively implement actions required to recover species and enhance the function of the Delta ecosystem.</p> <p>These objectives have guided our long-term engagement in the Delta and our approach in evaluating the BDCP. To put our Delta engagement in context, TNC has consistently observed and operated from the perspective that the status quo approach to water management and ecosystem improvements is a slowly unwinding ecological disaster in the Delta. As both water management actions and restoration programs in the Delta are now effectively administered by the courts, we see the status quo in the Delta today as simply a series of actions aimed at avoidance of the declaration of "jeopardy" with the likely result of continued declines of threatened and endangered species in the Delta to the point where these species face an irreversible path to extinction (Mount et al. 2013). Additionally, we note that the recently published Independent Science Panel Report [Footnote 6: <a href="http://deltacouncil.ca.gov/science-event/10163">http://deltacouncil.ca.gov/science-event/10163</a>] on the Delta affirms many of the critical perspectives of the Delta ecosystem, and the importance of sound adaptive management practices in achieving the goals of the BDCP.</p>	
1755	4	<p>Ensure Adequate Outflows to Complement and Ensure Success of Ecosystem Restoration Across the Differing Needs of Multiple Species:</p> <p>Based upon considerations in meeting multiple species needs, the BDCP needs to assure sufficient outflow in all seasons and in all water year types (particularly dry and critically dry years) to maintain healthy populations. Currently, minimal flows are prescribed by existing legal settlements such as D-1641 and the Biological Opinions on system operations (OCAP) [Footnote 7: On December 15, 2008, the Fish &amp; Wildlife Service issued a Biological Opinion (BO) on the Long-Term Operational Criteria and Plan (OCAP) for coordination of the Central Valley Project and State Water Project.] Figure 1 (below) demonstrates the complexity of flow conditions aligned with the needs of particular species, demonstrating complex spatial and temporal components of flow regimes that vary across different species.</p>	<p>The lead agencies' 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. In addition to the added water management flexibility created by new water diversions and operational scenarios, the project would improve habitat, increase food supplies and reduce the effects of other stressors on the Delta ecosystem. For information on operational criteria, please see Master Response 28. Adaptive management and monitoring is discussed in Master Response 33.</p>
1755	5	<p>[ATT 1: Figure 1. Matrix of fish species responses to a variety of flow-related parameters (Fish Agency Scenarios for BDCP Initial Operations Development, May 2012). Note that the Importance to species ranges from high to critical in this figure therefore all of the flow components listed here are important to at least one species.]</p>	<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>
1755	6	<p>Prioritize and Focus on Near-Term Restoration Actions That Are Likely to Achieve Ecosystem Function and Habitat Viability Objectives:</p> <p>Restoring a targeted number of acres in the Delta will be an important component of recovering the health and functioning of the Delta ecosystems. However, acres should not be the sole measure of success since it is unknown exactly how many acres of different type and condition will be needed. In addition, uncertainty about the impacts of climate change and how the system will respond to changed infrastructure operations, and the inability to address stressors outside the scope of export operations all serve to add additional uncertainty around critical BDCP assumptions. In particular, current acreage targets for habitat restoration were selected based on restoration potential given existing land uses</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</p>

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		<p>and other constraints (mostly abiotic factors) within the various restoration opportunity areas. However, how exactly populations of covered species and the ecosystem will respond to restoration at the proposed scale of BDCP remains uncertain, especially in the context of climate change. Whether or not the proposed restoration actions and other complementary efforts in the Delta translate into population increases for the covered species is an untested hypothesis.</p> <p>For these reasons, BDCP should focus immediately on testing restoration of high quality habitat in areas with high potential for success and areas that will prove to be instructive in implementing conservation projects over time in an integrated fashion. This approach can help inform adaptive management and result in conservation programs that are of greatest benefit to the species based on the new information that is generated, rather than assuming implementation of the prescribed fixed acreage targets will achieve the recovery objectives of BDCP. [The Nature Conservancy] recommends that early experiments be conducted that will partially fulfill the proposed Conservation Measures, but also explicitly be used to test assumptions and quantify impacts in ways that improve future Conservation Measures. Restoration actions judged to be of potentially high impact and that need to be tested include:</p> <ol style="list-style-type: none"> <li>1. Yolo Bypass -- In the Yolo Bypass there are ranges of habitat modifications that can be undertaken in a relatively near-term basis that can improve floodplain functionality and deliver other habitat benefits. It will be important to better understand the relationship between habitat improvements and the timing, frequency and inundation periods, and corresponding benefits to species recovery, especially among salmonids.</li> <li>2. Tidal Wetlands Restoration -- Under Conservation Measure 4, there are a number of restoration projects that if tested at smaller scales initially can help inform the design of restoration over time that will improve the chances of success. We recommend that BDCP include using existing projects that are being proposed outside of BDCP, as well as early implementation of BDCP Conservation Measures as learning laboratories. This could include the McCormack-Williamson Tract project (a [The Nature Conservancy] project) which will provide important information about new intertidal habitat at the confluence of the Mokelumne and Sacramento Rivers. This project is being designed to improve habitat for the benefit of salmonids and tidal marsh dependent species. The project will also provide important information about what design features and affected ecological processes contribute to or hinder invasive aquatic species in this part of the Delta.</li> <li>3. Nontidal Marsh Restoration -- Conservation Measure 10 is also an important early stage restoration effort as it is important to avoid net loss of freshwater marsh habitat in the Delta as part of wider restoration objectives. Increasingly and especially in drought years the wetland habitats in the Delta for sandhill cranes, waterfowl, and shorebirds are critically important for migratory birds. Additionally, as a practical matter it is important to demonstrate that habitat to benefit some species in the BDCP does not come at the expense of other habitat values in the Delta. We recommend that early implementation and experimentation be carried out to improve designs and quantify response of species that may be impacted [by] loss, changes to, or restoration of non-tidal freshwater wetlands. For example, creation of new habitat for sandhill cranes to compensate for impacts to habitat will require some certainty that sandhill cranes are able to locate and begin using these new habitats successfully. This should be tested soon, rather than assume that if BDCP builds it they will come.</li> </ol>	<p>conservation efforts.</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.</p> <p>Alternative 4A does not include Yolo Bypass improvements and only a fraction of the tidal restoration proposed under the BDCP (Alternative 4A would restore 300 acres of tidal wetlands). Individual restoration projects will be subject to their own environmental review and will require permits and/or approvals from state and federal agencies.</p> <p>For 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. Please also see Master Response 33 for information regarding Adaptive Management and Monitoring.</p>

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		<p>Based on early stage restoration efforts, subsequent restoration actions must be shaped, evaluated, and redesigned based upon a robust science program capable of measuring ecosystem and species response. Scientific information will continue to evolve and should be used to make adjustments to restoration programs and projects as well as and acreage targets. This strategy must necessarily be implemented with substantial flexibility over multiple decades in order to have a chance to achieve recovery of affected species.</p>	
1755	7	<p>Export Operations Must Be Governed to Meet Multiple Delta Ecological Flow Needs:</p> <p>In order to achieve recovery objectives across multiple species, the Ecological Flow Tool and other scientific studies (Mount et al. 2013) demonstrate that flows will need to be managed in ways that increase both seasonal and inter-annual hydrologic variability that help suppress invasive species and promote natives. Whatever permit is issued must incorporate the needed range of total flows and require flexibility in magnitude, timing and duration. This flexibility needs to be coupled with species-level monitoring to allow for better understanding of the relationship between flow and population abundance and inform appropriate changes through adaptive management as conservation strategies incorporate evolving conditions and we learn more about how integrated conservation actions perform.</p> <p>Exports directly impact outflow and the position of the X2 salinity isocline that are critical for the biological health of the Delta. Therefore export operations are an important component of meeting ecological flow needs and one of the few variables that can be managed adaptively in the system. Under the proposed BDCP scenarios run to date, exports range from 4.5 million acre-feet (MAF) (CS5), to 5.4 MAF (S6) to 5.9 MAF (Alt 1a/PP). Only CS5 reduces exports from current baseline yet exports would still remain higher than 57% of the years since 1951.</p> <p>The scientific consensus is that reducing exports and allowing more variable flows will have the greatest impact on restoring the Delta ecosystem (Hanak et al. 2013). Reducing exports in dry years is of particular importance, as already reflected in one of the BDCP objectives. The BDCP and associated operations should be implemented in ways that allow export volumes and timing to be changed adaptively throughout the term of the permit, especially given the proposed 50-year permit term, and the high level of uncertainty about how species health evolves in response to conservation actions. Consequently, any approved export allocation and commensurate operations plan should include criteria that is informative about when flows will be taken from the new north Delta diversion point, and when exports will be accommodated by south Delta pumping to better understand potential entrainment and other impacts on covered species. Additionally, the BDCP should include operational criteria for all alternatives that are adequately documented. TNC is generally agnostic on the sizing of an alternate conveyance facility as we have consistently maintained that it is how the facilities are operated that will be determinative whether the BDCP will meet defined biological objectives. Additionally, as a practical matter, project operations should be subject to approval and oversight of the wildlife agencies, consistent with other NCCP governance practices.</p>	<p>As already noted, Please note that the BDCP is no longer the preferred alternative. The preferred alternative is now Alternative 4A and no longer includes an HCP. The preferred alternative, 4A, reflects project operations that minimize and avoid adverse effects to fish and includes a collaborative science and adaptive management program to address uncertainties now and in the future.</p> <p>Also, the EIR/EIS includes a wide range of alternatives that address different criteria for reservoir releases, diversion criteria, Delta outflow, and reverse flow conditions in the central and south Delta, as described in Section 3.6 of Chapter 3, Description of Alternatives. Compared to the No Action Alternative and Alternatives 1 through 6 and 9, Alternatives 7 and 8 result in reduced south Delta reverse flow conditions and changes in minimum instream flows to be more reflective of historic hydrographs prior to the construction of water management facilities in California. Alternative 8 results in increased Delta outflow as compared to the No Action Alternative. Each of the alternatives included different operational criteria to provide a range of reasonable alternatives in accordance with NEPA.</p> <p>Please see Master Response 28 for more information regarding operational scenarios. Also see Master Response 33 regarding adaptive management and monitoring.</p>
1755	8	<p>Additional Policy Actions Required to Provide Conditions for BDCP to Succeed:</p> <p>While the BDCP is a "stand alone" permit, in order to succeed, it must also align with other critical water management reforms, including sustainable management of the State's groundwater resources. Consistent with California's 'dual goals' adopted as part of the State's 2009 water reforms, the BDCP must result in reduced reliance on the Delta as a</p>	<p>The project is just one element of the Governor's Water Action Plan as a long-range strategy to meet anticipated future water needs of Californians in the face of expanding population and the expected effects of climate change, as described in the BDCP/California Water Fix Partially Recirculated Draft EIR/Supplemental Draft EIS. The proposed project is one part of a diverse portfolio of strategies needed to meet California's overall water management needs. It is not a substitute for increased commitments to</p>

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		<p>water supply source, along with an active restoration program in the Delta. As a starting-point, the following measures should be undertaken in parallel fashion with the BDCP and BDCP permits linked to adherence to and progress on these critical actions:</p> <ol style="list-style-type: none"> <li>1. Continued enforcement of California's constitutional prohibition against non-beneficial, unreasonable, and wasteful water use.</li> <li>2. Protection of values recognized under the public trust doctrine including adequacy of flows in navigable waterways and tributaries.</li> <li>3. Integration of sustainable groundwater management into California state water policy and local water district and individual water user actions.</li> <li>4. Demonstrably increased statewide focus on water conservation (including improved efficiency and productivity of use).</li> <li>5. Projects designed to reconcile overall water demand that serve to reduce pressure on the Delta.</li> </ol> <p>The Nature Conservancy also recognizes that even the most effective BDCP cannot in itself result in successful restoration of the Delta. TNC's efforts to analyze the BDCP include review of BDCP documents; coordinating and helping to fund independent scientific analysis; and joining in different complimentary dialogues and processes aimed at ecological restoration in the Delta as well as participating in specific multi-party groups focused on such issues as implementation of the near-term Biological Opinions. Our conclusion based on all of these engagements and our own conservation and water management work across the region and State is that restoration of ecological values and water supply reliability in the Delta will depend on an integrated Plan, such as the Governor's Water Action Plan that successfully implements comprehensive water management reforms across the entire connected system.</p>	<p>other water supply solutions, including recycling, desalination, water conservation and storage.</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 <a href="http://resources.ca.gov/docs/Final_Water_Action_Plan_Press_Release_1-27-14.pdf">http://resources.ca.gov/docs/Final_Water_Action_Plan_Press_Release_1-27-14.pdf</a>. 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: <a href="http://www.waterplan.water.ca.gov/">http://www.waterplan.water.ca.gov/</a>.</p> <p>Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1, EIR/EIS, describes the range of conveyance alternatives considered in the development of the EIR/EIS. Appendix 1B, Water Storage, EIR/EIS, describes the potential for additional water storage and Appendix 1C, Demand Management Measures, EIR/EIS, describes conservation, water use efficiency, and other sources of water supply including desalination. While these elements are not proposed as part of the proposed project, the Lead Agencies recognize that they are important tools in managing California's water resources.</p> <p>Please see Master Response 4 regarding the selection of alternatives analyzed, Master Response 6 regarding demand management, Master Response 7 regarding desalination, and Master Response 37 regarding water storage.</p>
1755	9	<p>Future Water Reliability Should be Achieved through Water Optimization and Not through Increased Delta Supplies:</p> <p>To meet ecological objectives, exports from the Delta will need to be reduced most dramatically in dry years and may also need to be reduced in all but wet years (Hanak et al. 2013, Mount et al. 2013). Reductions in exports at critical times to maintain Delta outflows will be partially compensated for by increasing exports in wet years. However, optimizing management of the system to increase the health and resiliency of the Delta ecosystem, while also achieving greater water supply reliability, will also require water conservation, efficiency, and water management reforms related to groundwater, transfers and storage. Additionally, there must be a reconciliation of total available water resources within and outside the Delta to manage water on a sustainable basis. In support of this principle, The National Research Council (2012) acknowledges that while most surface flows in California have been fully allocated or over-allocated, this does not mean the state is "running out of water." The committee recommends that the state undertake "a comprehensive review of its water planning and management".</p> <p>Whether or not the BDCP goes forward, The Nature Conservancy believes that it is imperative that conservation actions in the Delta must be integrated in larger integration of water management efforts. Such an approach is fully consistent with Governor Brown's Water Action Plan which outlines a series of actions designed to achieve sustainable use of</p>	<p>Please see reponse to comment 1755-8.</p>

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		water resources for the long-term benefit of people, agriculture and wildlife.	
1755	10	<p>Project Operations Must Be More Flexibly Designed to Achieve Flows Required to Meet Multiple Species Needs:</p> <p>The preponderance of scientific data point to the conclusion that increased average outflow, along with more variable outflows are required to achieve the desired conservation outcomes in contributing the recovery of threatened and endangered aquatic species (Mount et al. 2012, Moyle et al. 2011, National Research Council 2012, Hanak et al. 2013). Dual conveyance conceptually could provide the operational flexibility that would allow for increasing Delta outflows at critical times and creating the kind of seasonal variation in flows that benefit native species and discourage invasive species. However, regardless of operational flexibility, flow regimes will need to be adaptively managed to meet the differing needs of multiple species. We are skeptical that the operations as proposed and modeled (including those we evaluated independently), reflect what actual future operations will be. As proposed and modeled in the BDCP the resulting flows contain inconsistencies with independent analysis of the flows resulted from the proposed scenarios (Mount et al. 2013) and may result in either equivocal benefits to target species or trade-offs among target species that are difficult to reconcile (Alexander et al. 2014). This only adds to the already abundant uncertainty in the ability of the BDCP to achieve its intended goal of restoring a healthy Delta ecosystem.</p>	<p>The EIR/EIS includes a wide range of alternatives that address different criteria for reservoir releases, diversion criteria, Delta outflow, and reverse flow conditions in the central and south Delta, as described in Section 3.6 of Chapter 3, Description of Alternatives of the EIR/EIS. Compared to the No Action Alternative and Alternatives 1 through 6 and 9, Alternatives 7 and 8 result in reduced south Delta reverse flow conditions and changes in minimum instream flows to be more reflective of historic hydrographs prior to the construction of water management facilities in California. The action alternatives were developed to increase flexibility for SWP and CVP operations while reducing adverse impacts to aquatic resources. For example, most of the action alternatives, including the preferred alternative, would result in more water exported in wetter years and less water exported drier water years. Alternative 8 results in increased Delta outflow as compared to the No Action Alternative.</p> <p>Please see Master Response 4 for additional detail on the alternatives involving an HCP component. For more information on Delta flows see Master Response 28 for additional detail regarding the operational criteria and Master Response 30 regarding modeling efforts.</p> <p>The preferred alternative also includes a robust adaptive management component as the commenter indicates is crucial to real-time management of species needs. For more information regarding adaptive management please see Master Response 33.</p>
1755	11	<p>BDCP Models Show that Proposed Flow Scenarios Will Provide Limited Benefits to the Covered Species:</p> <p>Based on our evaluation of the BDCP models and impacts on flow, the operations and resulting flows are predicted to have potentially significant beneficial effects for delta smelt; however, results for longfin smelt and other covered fish species are ambiguous (Mount et al. 2013, Alexander et al. 2014). Differences in high outflow versus low outflow scenarios have varying impacts, both beneficial and adverse, for different species -- calling out the need for an effective and well-coordinated adaptive management program. For example, the Mount Report effects analysis of proposed operations predicts the following outcomes with respect to the low outflow scenario (LOS) and high outflow scenario (HOS):</p> <ol style="list-style-type: none"> <li>1. Modest improvements overall under LOS and HOS scenarios;</li> <li>2. Both LOS and HOS scenarios decrease incidence and magnitude of negative flows, suggesting potential reduction in direct impacts of pumping through entrainment. HOS provides most benefit;</li> <li>3. Outflows during periods of vulnerability for adult smelt (Dec-Mar) and juvenile smelt (Apr-Jun) increase under LOS and HOS over the No Action Alternative; however, flows in Old and Middle River remain negative in all but the wettest years and outflow under the LOS is lowest among alternatives during wet years;</li> <li>4. Small positive effect on San Joaquin River Outflow that may benefit migrating salmon;</li> <li>5. In intermediate years, north Delta diversions seem to just augment south Delta exports rather than replacing them;</li> <li>6. Despite predicted, but marginal improvements in flows, independent models suggest that there will be no significant increase in smelt abundance under any of the proposed</li> </ol>	<p>The specific flow-related portions of this comment are consistent with the results of CALSIM II and DSM2 model results for the action alternatives. The effects of the CALSIM II and DSM2 model results on fisheries are presented in Chapter 11 of the BDCP EIR/EIS. Additionally, the new preferred alternative, 4A, includes a Collaborative Science and Adaptive Management Program to make adjustments over time based on improved understanding and actual conditions. Alternative 4A will include Fall X2 requirements for Delta smelt consistent with the 2008 USFWS BiOP, and spring outflow criteria to minimize and avoid project-related effects to longfin smelt. See Chapter 3 in the FEIR/EIS for more information.</p> <p>A discussion of flows can also be found in Master Response 28, Operational Criteria.</p>

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		<p>scenarios.</p> <p>Several of the modeled outcomes suggest potentially negative impacts, including:</p> <ol style="list-style-type: none"> <li>1. Continued reverse flows in the Old and Middle Rivers in all but the wettest years;</li> <li>2. The potential that all predicted benefits will be overwhelmed by inter-annual variation due to natural factors and carry-over effects of storage across years;</li> <li>3. Potential benefits of the proposed alternative operations for covered species are almost entirely for delta smelt with little benefit accruing to longfin smelt and salmonids with potentially negative impacts on longfin smelt of the LOS compared to No Action Alternative;</li> <li>4. While implementation of the BDCP as proposed will increase floodplain habitat on the Yolo Bypass, benefiting listed salmon, the timing of outmigration and difficulty of diverting fish onto the bypass will limit the benefits (Mount et al. 2013);</li> <li>5. The modeling also shows that the North Delta diversion facility will have direct and indirect adverse impacts on covered fish species and it is uncertain whether the measures proposed under Conservation Measure 2, Yolo Bypass Fisheries Enhancement, will fully mitigate for these impacts on salmonid entrainment, let alone lead to net improvements in population of covered species;</li> <li>6. To further complicate matters, north Delta diversions must meet flow bypass requirements in intermediate and drier years and thus are intended to augment south Delta exports rather than replacing them.</li> </ol>	
1755	12	<p>The Nature Conservancy's Independent Modeling, Using the Ecological Flows Tool (EFT), Also Shows Mixed Benefits to the Covered Species From the Various Flow Scenarios:</p> <p>The Nature Conservancy used the EFT (Alexander et al. 2014) to model the target species outcomes of the proposed BDCP scenarios in order to better understand the potential impacts of the proposed conservation actions and the correspondent, and potentially unintended, outcomes on multiple species and habitat types. The EFT analysis of BDCP scenarios generally supports our conclusion that there are potentially substantial benefits to covered species, but those benefits are uneven, and it is difficult to project any particular flow regime that has universal benefits for all aquatic habitat conditions -- and species dependent on those habitats -- from implementation of either the low outflow scenario (LOS) or high outflow scenario (HOS) options (Alexander, Robinson, and Poulsen 2014). EFT results more importantly illustrate significant limitations to the proposed alternatives due to the limited set of options being considered and the varying effects on different life-history stages of each species.</p> <p>In particular, the EFT analyses of the BDCP alternatives show that overall, the Low Outflow Scenario (LOS) BDCP alternative is preferable for species completing life-history stages in the Sacramento River (especially fall-run Chinook, late fall-run Chinook and spring-run Chinook) while the High Outflow Scenario (HOS) BDCP alternative is preferable for San Joaquin-Delta species (especially longfin smelt and, to a lesser degree, delta smelt). Fall-run Chinook, late fall-run Chinook and splittail do better under all BDCP alternatives considered ("winners"), while green sturgeon, deterrence of invasives, and brackish wetland habitats are expected to experience deteriorating conditions under the HOS alternative. Spring-run Chinook are expected to do the most poorly under enhanced spring outflow (ESO) and HOS</p>	<p>The incremental changes in Delta outflow under Alternative 4A compared to baseline conditions are a function of both the facility and operations assumptions, including north Delta intakes capacity of 9,000 cfs, OMR flow requirements, Fall X2 requirements, and the reduction in water supply availability due to increased north of Delta urban demands, sea level rise, and climate change (the last three assumptions, plus Fall X2 requirements, are included in both the No Action Alternative (ELT) and Alternative 4A, but not in Existing Conditions). Results for the range of changes in Delta outflow under Alternative 4A are presented in more detail in Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix. Changes in long-term average Delta outflow under Alternative 4A (ELT) as compared to the No Action Alternative (ELT) and Existing Conditions are shown in Figures 5-37 through 5-39 and Tables 5-10 through 5-12 in Chapter 5.</p> <p>To summarize changes in Delta outflow under Alternative 4A, late-fall and winter outflows remain similar or show minor reductions in Alternative 4A (ELT) compared to No Action Alternative (ELT) and are slightly higher relative to Existing Conditions. In the spring months, outflow would remain similar under Alternative 4A (ELT) as compared to No Action Alternative (ELT), and would be slightly reduced compared to Existing Conditions. In the fall months, outflow under Alternative 4A would increase relative to Existing Conditions, and as compared to the No Action Alternative (ELT), would be similar because of Fall X2 requirements in wet and above-normal years.</p> <p>For more information on flows and the effects on aquatic species, see Chapter 11 of the EIR/EIS and Master Response 17 for a discussion of outflows and effects on Delta smelt and longfin smelt.</p>

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		<p>alternatives in terms of spawning habitat, egg-to-fry survival, and redd dewatering. In general, juvenile stranding losses increase, particularly for winter-run Chinook. Delta temperature stress on winter-run Chinook also increases over all Early Long Term (ELT) alternatives. Likewise, Delta temperature stress is also elevated for all ELT alternatives for steelhead. The EFT results suggest the HOS is more likely to benefit delta smelt and the LOS is predicted to be detrimental to longfin smelt.</p>	
1755	13	<p>The Nature Conservancy's Independent Modeling Demonstrates That Climate Change Will Likely Have a Greater Impact on Operations than Anticipated in the BDCP:</p> <p>Analyses of BDCP scenarios using the Ecological Flows Tool, which includes changes in future climate and sea level, highlight the need for greater focus on efforts to mitigate for the direct impacts of climate change as a singular force in the Bay-Delta ecosystem and its tributaries. EFT results predict that climate change impacts may overwhelm some of the benefits gained through changes in operations (Alexander et al. 2014). The latter challenge illustrates the need to have climate change mitigation and adaptation strategies more explicitly built into operational scenarios in BDCP and that they be included and evaluated in any adaptive management program for BDCP.</p> <p>With a few exceptions, the climate change signal and effects in the BDCP study generally dwarfed the operational alternatives considered in the scope of the BDCP, especially in the Late Long Term period (LLT) (Alexander et al. 2014). The BDCP proposed alternatives could have the potential to provide some offsetting benefits to help compensate for climate change effects. In particular, spawning habitat is improved by the conveyance and operations in BDCP alternatives for fall-run Chinook and spring-run Chinook (LOS alternative only). Delta rearing conditions may improve by notching of the Fremont Weir associated with the Expected Starting Operations (ESO), low outflow scenario (LOS) and high outflow scenario (HOS) BDCP alternatives, offsetting losses that are otherwise expected for late fall-run, winter-run and, to a lesser degree, spring-run Chinook. Spring-run Chinook may also receive compensatory offsets of otherwise detrimental climate change effects from the LOS scenario, in terms of reductions to redd dewatering losses and improved Sacramento River rearing conditions. Unfortunately, it is unknown whether these benefits will be sufficient to compensate for the remaining impacts predicted by EFT for other portions of these species life history.</p>	<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 BDCP/CWF conveyance facilities, an analysis would be completed with updated sea level rise projections for the life cycle of the facilities. As described in 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>As described in Chapter 3, Description of Alternatives, wetlands restoration is only considered in a programmatic manner 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. For information on climate change and the proposed project, please see Master Response 19.</p>
1755	14	<p>"No Action Alternative" Baseline Demonstrates the Significant BDCP Challenge in Meeting Recovery Standard:</p> <p>The magnitude of predicted climate effects illustrates the inadequacy of evaluating alternatives relative to a No Action Alternative, which represents a progressively deteriorating baseline. Based on that standard, the preferred alternative could be selected based on slowing the rate of loss relative to doing nothing but allowing the covered species to continue declining. Studies that ignore such changes to the baseline divert attention from the cumulative total change in ecological conditions and can mask what can often be striking differences between historic operations and those proposed. Use of a historical reference case was recommended by the Delta Science Panel in its review of BDCP, even though the approach is unwelcome by some who feel that use of a historical record is a flawed reference with numerous shifts in operational standards and climate. The counterpoint to this critique is that the use of a historical reference case better enables the evaluation of alternatives relative to whether they are capable of recovering populations to some level of stability, as opposed to which alternative is most effective in slowing the</p>	<p>The assumed climate change effects on reservoir operations were included in the NAA (ELT at 2025 and LLT at 2060) and were used to compare the EIR/EIS alternatives. This allowed the effects of each alternative to be discussed under future (assumed) climate change conditions. For example, the shifted hydrology caused most reservoirs to approach the minimum level needed for power operations (i.e., "minimum storage") in several more years. Because the CALSIM model used the same assumed reservoir operations rules for each alternative, the comparison between alternatives and the baseline cases are unbiased. Each of the impact assessment sections begins with a comparison of the No Action Alternative (NAA, for ELT or LLT) to the existing conditions. This provides an evaluation of the effects from changes in hydrology assumed in the NAA. A comparison of the existing conditions operations to the recent historical operations was not provided in the EIR/EIS.</p> <p>Attachment 5C.A in the Draft BDCP, CALSIM and DSM2 Modeling Results for the Evaluated Starting Operations Scenarios, does provide a comparison of historical monthly river flows and reservoir storage and releases, as well as Delta exports and Delta outflow for the WY 1963-2003 (second half of the CALSIM modeling period). Generally the historical operations were very similar to the existing conditions (EBC1 in</p>

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		<p>degradation of the Delta ecosystem -- or recovering any particular species. Analysis of alternatives should be compared to historical conditions to provide a more informed assessment of the systemic impacts of climate -- whether the low outflow scenario or high outflow scenario alternatives -- and, it is imperative to evaluate BDCP and its proposed conservation strategies 2-22 in the context of whether those conservation measures are likely to increase ecosystem resilience amid other values in the Delta.</p>	<p>the graphs); reservoir operations shifted for the NAA (EBC2_ELT and EBC2_LL in the graphs).</p> <p>The CEQA comparison of the alternatives with the existing conditions provides a very similar impact assessment as the suggested comparison with the recent historical operations. The major difficulty with determining the effects of climate change plus the alternatives on the Delta ecosystem or particular species is the large uncertainty in what specific habitat conditions (i.e., monthly flows, temperatures, or salinity) have the greatest influence on the Delta ecosystem or species of concern. The assessment of the alternatives from a common baseline (existing conditions or NAA) allows an accurate comparison of the changes in operations that are likely to affect species of concern and the Delta ecosystem. It is not possible to quantitatively estimate increased abundances of fish nor the recovery potential for listed species for the existing conditions, the NAA (ELT or LLT) nor for the Alternatives. The qualitative discussion and ranking provided in the EIR/EIS Chapter 11 uses the best available assessment methods.</p> <p>For more information on baseline conditions see Master Response 1. With regard to Greenhouse Gas Emissions and Climate Change, please see Master Response 19.</p>
1755	15	<p>The Uncertainties Surrounding the Anticipated Ecosystem Benefits of the BDCP Make Independent, Effective, Accountable and Adaptable Governance Essential:</p> <p>As illustrated in our concerns above, there are many uncertainties regarding how species will respond to the proposed operational scenarios as well as any other yet to be evaluated scenarios. In addition, the BDCP as currently designed is overly optimistic about the benefits that will result from habitat restoration in the Delta, which are also fairly uncertain. As a result, any assessment of how the BDCP is likely to perform in improving species viability is likely to be speculative and, for this reason, an effective BDCP will require a comprehensive, well-funded, and clearly defined adaptive management strategy within capable decision making authorities and within permit terms that allow flexibility in magnitude, timing and duration of water flows. The assurances offered State and federal water contractors must incorporate greater flexibility in managing water flows.</p> <p>While "adaptive management" processes can be established and funds expended, there is no example in this nation of substantial change in operations of a large project occurring as the result of "adaptive management" standing apart from permit conditions and effective decision-making authority. A notable example of the challenge is provided by Glen Canyon Dam, where experimental adaptive management high flow releases of large pulses of water demonstrated important sediment distribution advantages to downstream Colorado River ecosystems, but operating rules over flows have not been changed. [Footnote 8: For recent environmental documents showing how the high flow experiments are conducted within parameters of the original Record of Decision, see: <a href="http://www.usbr.gov/uc/envdocus/ea/gc/HFEPprotocol/index.html">http://www.usbr.gov/uc/envdocus/ea/gc/HFEPprotocol/index.html</a>. For an academic analysis of agency/science/stakeholder relationships, see: <a href="http://www.columbiaenvironmentallaw.org/assets/pdfs/35.1/Susskind_35.1.pdf">http://www.columbiaenvironmentallaw.org/assets/pdfs/35.1/Susskind_35.1.pdf</a>. Additional examples of challenges to large scale adaptive management efforts include Northwest forestry management, the Everglades and the Chesapeake Bay watershed.] Existing operating rules are supported by significant users and the high flow experiments have been undertaken within water flow parameters of adopted operating rules. To change operating rules requires expensive and politically challenging environmental review processes. A similar challenge would confront parties seeking to change the adaptive management framework proposed within the BDCP. After Plan adoption, significant change in BDCP water operations would require environmental review processes equivalent to those required for permitting and project completion now.</p>	<p>For information regarding BDCP, including governance issues, 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 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 reintiated 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>For more information, see Master Response 28 regarding operational criteria and Master Response 33 regarding Adaptive Management.</p>

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		<p>The central principles of effective adaptive management are scientifically robust monitoring and, at times, experimentation, using new information to adjust practices and policies (in this instance water management operations and habitat restoration designs) to achieve the ecological objectives (National Research Council 2004, Williams 2011). Unfortunately, while BDCP provides extended discussion of an adaptive management program, much less attention is given to changing behaviors and operations and a decision-making framework that will result in the practice of actual adaptation.</p> <p>The BDCP proposes an adaptive management strategy as part of its science program to guide and adapt operations over time and appropriately acknowledges the significant uncertainties around function of the Delta ecosystem and its response to BDCP implementation. However, the proposed strategy is inadequate to ensure that either biological objectives, implementation of actual conservation measures (beyond Conservation Measure (CM) 1), or a framework that can predictably lead to adaptive management actions can be achieved. Even Conservation Measure 2, Yolo Bypass Fisheries Enhancement, is not clearly defined, especially regarding magnitude, timing, and duration of flows. In addition, private ownership of land in the Delta, conflicting uses, and regulations all are practical realities that will need to be addressed as part of the restoration efforts.</p>	
1755	16	<p>Adaptive Management Must Inform, Support and Constrain Decisions:</p> <p>The discussion of adaptability in BDCP documents is complex, spread among several locations and difficult to comprehend in total. Figure 2 presents the variety of possible adaptive actions in a reasonably coherent whole. An important inference from Figure 2 is that BDCP identifies only three areas for adaptive management, regarding possible changes in (1) biological objectives, (2) conservation measures and (3) six of the nine changed circumstances. These could be useful roles, but are limited to techniques to complete an activity and possibly providing information upon which resources are shifted among conservation measures. In sum, the authorities for adaptive management are narrowly and prescriptively defined in a manner that is likely to inhibit the actual practice of adaptive management.</p>	Please see response to Comment 1755-15.
1755	17	[ATT 2: Figure 2. Comparison of provisions for change and adaptation re BDCP.]	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.
1755	18	<p>The consensus-driven adaptive management structure as currently defined in the BDCP impedes timely adaptive management actions:</p> <p>The proposed Adaptive Management Team (AMT) consists of a broad array of staff from agencies, contractors, and science programs that will be chaired by the BDCP Science Manager. The Science Manager is selected by the Program Manager who, in turn, answers to the Authorized Entities Group (AEG). The AMT is tasked with initiating any proposed changes to conservation measures and biological objectives based on new research and monitoring. The AMT as proposed will be consensus driven with any unresolved decisions taken to the AEG and Permit Oversight Group (POG) for resolution. For minor modifications, the POG will make the final decision. For formal amendments and changes in biological objectives or conservation measures adopted through the adaptive management process, the Fish and Wildlife Agency official with jurisdiction will make the final decision.</p> <p>However, achieving consensus among such diverse stakeholders within the AEG and POG has the potential to be extraordinarily time-consuming, and this creates a structure in which</p>	Please see response to Comment 1755-15.

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		<p>one party may delay or obstruct implementation of adaptive management actions. Also, the proposed structure of the AMT, with regulated entities retaining a large role, directly and indirectly through the Science Manager, in deciding how adaptive management is used and what changes to operations are proposed presents a significant conflict of interest.</p> <p>Finally, even if consensus is attained on a timely basis, any formal amendments to the BDCP, including changes to conservation measures or biological objectives, must follow the same process that has been followed for the initial approval of the BDCP. This apparently would include full National Environmental Protection Act/California Environmental Quality Act analysis, public review and comment, including publication in the Federal Register, and section 7 consultation. All of this portends a very time-consuming and contentious process that reduces the likelihood that such changes will be adopted in a timely or effective manner, further hindering the ability to effectively adaptively manage the system.</p>	
1755	19	<p>The Adaptive Management Strategy must include an Experimental Approach:</p> <p>The uncertainties surrounding the proposed Conservation Measures to achieve the desired ecosystem benefits are well established. Experimental restoration projects are necessary to determine whether the proposed restoration actions will achieve their intended outcomes. For example, there is strong evidence that smelt are food limited, especially from spring through fall each year (Miller et al. 2012). But BDCP overestimates the effects of increased plankton production and export from restored marshes and floodplains. Based on calculations prepared on behalf of The Nature Conservancy and American Rivers (Mount et al. 2013), even assuming highly favorable assumptions about production and export of plankton, restored tidal marshes and floodplains will likely make at most a modest contribution to increasing food availability for smelt and longfin smelt do not use tidal marshes frequently. Delta smelt may benefit given their frequent use of shallow water and areas like Cache Slough, but the magnitude of the effect is impossible to predict. Nevertheless, many other species, other than smelt, are likely to benefit from restoration, but here too it is difficult to know by how much. The high level of uncertainty about outcomes points to the need for experimental restoration projects early in the implementation of the BDCP to determine whether large-scale, expensive restoration will achieve the assumed food-production and habitat provision goals, using science and adaptive management to improve implementation over time to design optimal restoration programs.</p> <p>Lessons learned from tidal marsh restoration will play out over a long timeframe. Therefore, it becomes critically important to initiate restoration projects now to start the learning process and develop relevant knowledge that can be applied and guide restoration over the next 10 -- 30 years. The BDCP must acknowledge and plan for the fact that it is highly unlikely that any habitat solutions and flow regimes will benefit all species. There will always be tradeoffs, winners and losers, and science can only provide alternatives for decisions to manage tradeoffs. A strong decision making process must be in place address this challenge.</p> <p>Water project operations designed to increase Delta outflows and increase the frequency and duration of flooding on the Yolo bypass represent primary strategies in BDCP that can be adaptively managed on temporal scales that allow early and regular adjustments to operations based on new understanding.</p> <p>Overall, the BDCP science program needs to provide clear measurable goals and objectives in a manner by which BDCP implementation and performance can be measured, improved upon and adjusted to reflect changing scientific understanding and changing environmental</p>	<p>Please see response to Comment 1755-15. For a discussion of the decision tree element of BDCP (Alternative 4 in the EIR/EIS) see Master Response 44.</p>

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		<p>conditions. All major elements of the science program should be peer reviewed on a periodic basis by the Delta Independent Science Board. The BDCP should actively apply an integrated scientific process and reliable scientific tools -- such as the Ecological Flows Tool -- to inform the adaptive management conducted under the Plan. The science developed under the Adaptive Management Plan should more explicitly inform a rigorous and transparent decision-making process. Given the scientific uncertainty and variables to success that surround the BDCP, an effective adaptive management regime will in all likelihood define the success or failure of the BDCP. Incorporating such analyses and information as the core of the BDCP can provide an on-going evaluation of the successes and failures of the BDCP to chart progress in attaining biological goals and objectives. The structure of advisory committees under BDCP, lack of specific funding commitments, absence of an "experiment-based" approach to restoration, and the lack of accountability to modify habitat and flow strategies in a practical sense all represent significant impediments to the viability of the existing adaptation and 'decision tree' approach in the BDCP.</p>	
1755	20	<p>Independent Science Review and Coordination with Existing Science Programs is Critical:</p> <p>The Adaptive Management Team (AMT) is required to seek independent science review of research and monitoring results or proposed changes to operations only as the AMT determines appropriate. Given the proposed structure of the AMT and its consensus-driven approach, we believe this discretion is unlikely to lead to a meaningful level of independent review by subject experts, significantly hampering the ability to appropriately change operations based on the best available science. Lack of independence will bias use of information and again serve to likely stall any real use of adaptive management.</p> <p>The BDCP proposes that the research and monitoring program of BDCP and the AMT will be well-coordinated with existing science programs in the Delta (e.g., Delta Science Program). A more detailed and specific commitment to full integration of science across entities and programs in the Delta is recommended to effectively coordinate research and monitoring, achieve the economies of scale needed to implement the massive effort this will require, and to ensure the best available science is truly applied to adaptive management of the BDCP. Without this level of detail, the potential for a lack of integration with other science programs could result in redundancy or, at worst, conflicts.</p>	Please see response to Comment 1755-15.
1755	21	<p>The Adaptive Management Program Must be Adequately Funded:</p> <p>The adaptive management program and its coordination with other efforts will require significant financial resources and no specifics on funding or commitments to funding are provided in the BDCP. The BDCP proposes a commitment to funding, but no details are provided on how that funding will be administered.</p> <p>Numerous scientific, operational, and conservation assumptions create significant uncertainties regarding whether the BDCP can achieve its intended objectives. This is precisely why a well-funded, coordinated, and effective adaptive management framework will be essential if BDCP is ultimately to succeed in rebalancing Delta ecology.</p>	Please see response to Comment 1755-15. For more information on funding please see Master Response 5, BDCP.
1755	22	<p>The Real Time Operations lack critical details that will undermine ability for future adjustment:</p> <p>One component of the proposed adaptive management program for BDCP is application of an annual process of Real Time Operational adjustments (see Implementing Agreement, Section 10.2.2 [Footnote 9: Subsequent references to the Implementing Agreement are</p>	Please see response to Comment 1755-15.

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		<p>cited as "IA [Section] x.x.x.&gt;"). The proposed objective is to annually evaluate the impacts of operations and the resulting flows on Delta and longfin smelt, and use this information to make operational adjustments in the following year. We applaud the idea in concept given the uncertainties that exist around how changes in flows will ultimately impact these populations. We believe this could be a useful approach and important part of adaptive management strategy and suggest that this annual approach be well coordinated as part of the larger science efforts in the Delta -- through the Delta Science Program and, if implemented, continued for the life of BDCP.</p> <p>However, we are concerned that there are no details about how real time operations would be implemented, structured, and used to make actual project operations decisions. Under the proposed BDCP, decisions regarding real time operations are to be made by a Real Time Operations team, composed of designees from the Fish and Wildlife Agencies, DWR and the U.S. Bureau of Reclamation, and non-voting representatives of the water contractors. However, if the agency directors are unable to reach agreement about real time operations, no adjustments will be made. As a practical matter, this "default scenario" weighs heavily towards status quo operations, presumably based upon best case scenarios in the plan about the availability of water for export. Unless decisions related to real-time operations are part of a well-funded and coordinated effort across stakeholders, it is unlikely that this approach will resolve operations issues within the 10 years before operations with new conveyance go into effect. If this presumption is correct, it raises questions as to what decision would be made regarding which export operations criteria will be put into effect to start with, having not resolved some of these key uncertainties regarding impacts of flows. An example is seen in discussions of adaptive management in the Public Draft which emphasize "water-neutral" adjustments, meaning "no net annual water supply impact." [Footnote 10: See BDCP Public Draft, Section 3.4.23.1, page 3.4-355.]</p>	
1755	23	<p>Decision Tree Framework Must Include an Option that Allows for the Possibility that Initial Outflows May Not Be Sufficient to Achieve the Biological Objectives:</p> <p>Another problematic component of the adaptive management process is the proposed Decision Tree approach to manage Delta outflows until the alternate conveyance facility becomes operational. Implementing the decision tree framework to achieve both water supply and desired ecological outcomes will require resources of scientists and fish and wildlife agency decision makers, competing with other demands on their energies, budgets and political capital.</p> <p>However, the BDCP lacks critical details about how the Decision Tree process will be implemented. Intense political pressure and conflict can be expected to be part of any decision tree procedure and this tension should be incorporated in the design. As a starting-point, the decision tree options should be symmetrical, e.g., allow for increased as well as decreased Delta outflow, as dictated by the science. The current decision tree framework is weighted towards supply considerations. However, new science and understanding could result in the conclusion that even proposed high outflows are too low to achieve intended biological goals and objectives.</p> <p>Among ambiguities in the BDCP is whether the high outflow scenario (HOS) is a potential baseline permit condition, or whether the low-outflow scenario (LOS) provides the baseline for the permit. Starting at the high outflow values would be a traditional way to address the uncertainties and risk to species identified in BDCP. We note also that a permit which starts at the low outflow levels would require very high effort -- and intense political conflict -- to</p>	<p>The decision tree is no longer being proposed in the Final EIR/EIS. The Proposed Project and NEPA preferred alternative, Alternative 4A, will include and Collaborative Science and Adaptive Management Program, in addition to operational criteria and real-time monitoring to minimize and avoid impacts to aquatic species. See response to Comment 15 in BDCP Letter 1755 for more detail. Please also see Master Response 44 for more information about the Decision Tree.</p>

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		<p>reestablish high flow parameters.</p> <p>The decision tree framework should include the following elements:</p> <ol style="list-style-type: none"> <li>1. Clearly establish "best readily available science" as the only decision rule when considering changes in outflow and explicitly remove reference to the narrower decision criteria now included at Table 304-1-1, pages 3.4.18 through 3.4.20, in particular under "spring outflow" at page 3.4.19 and "fall outflow" at page 3.4.20;</li> <li>2. Explicitly list the decisions for which the dispute process of section 7.1.7 is available;</li> <li>3. Require permit applicants to adequately fund the science process up front, and establish an independent entity such as the Delta Science Program as the "home" of the science process;</li> </ol> <p>Effective design of implementation processes, scientific review and public engagement are essential to the success of the decision tree process (e.g., use of external peer review panels as appropriate, establish a calendar of activities and structured decision points).</p>	
1755	24	<p>Rough proportionality mechanisms are not clearly expressed likely reducing effective accountability:</p> <p>As a Natural Community Conservation Plan, the BDCP must implement mitigation and conservation measures on a schedule that is "roughly proportional in time and extent to the impact [of an action] on habitat or covered species." (California Fish &amp; Game Code, section 2820, subd. (b).)</p> <p>"Rough proportionality" among water supply and ecosystem conservation actions is required, but the proposed linkages are not clearly defined and not effective until years in the future. In particular, the construction of CM 1 will effectively lock-in water flows for all elements of the BDCP.</p> <p>In addition, the Implementing Agreement states: "The Implementation Office will ensure that the Conservation Measures are implemented substantially in accordance with the Implementation Schedule, Exhibit D." [Footnote 11: See IA [Section] 11.1, page 40.] The Implementing Agreement goes on to state that "[i]f the Conservation Measures are implemented in accordance with the Implementation Schedule [Exhibit D] and procedure as detailed in Chapter 6.1.2 and Tables 6-1 and 6-2 of the Plan, Rough Proportionality will be considered by CDFW to be maintained in accordance with the NCCPA." [Footnote 12: See IA [Section] 11.1.1, page 40.]</p> <p>While Tables 6-1 and 6-2 are described as implementation schedules, they are not sufficient to provide any effective basis on which to make a determination of rough proportionality as they fail to specify any "triggers" by which lack of progress would be measured to demonstrate compliance with the "rough proportionality" requirement. Exhibit D may provide the necessary level of detail and will control over Tables 6-1 and 6-2. However, Exhibit D was not released with the Implementing Agreement and, as of the filing of these comments, was not publicly available. Until Exhibit D can be reviewed, it is not possible to evaluate whether the implementation schedule satisfies the "rough proportionality" requirement.</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. For information regarding BDCP, please see Master Response 5.</p> <p>For more information on operational flows, see response to Comment 1755-15.</p>
1755	25	A critical factor in both the ability to achieve the biological goals and objectives of the BDCP,	Please see response to Comments 1755-15 and 1755-23.

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		<p>and the functionality of adaptive management will depend upon clearly defining the water contractors' responsibility under the BDCP to meet adequate flows that enhance habitat functionality necessary for recovery of covered species. In particular, under terms of the Implementing Agreement and Chapters 3, 7 and 10 of the BDCP Public Draft, it appears that the water contractors' responsibility for flows is limited to the low outflow scenario (LOS). This condition seems inadequate and contrary to effective adaptive management -- which should first seek to assure adequacy of Conservation Measures -- as a prudent operating principle.</p> <p>While The Nature Conservancy understands the interest of the water contractors in defining their obligations for flows in the Delta, the lack of "Exhibit D", and the uncertainty of how threatened and endangered species will respond to conservation actions requires a more prudent response in determining what kinds of flows are necessary to avoid a "jeopardy" determination of species viability, let alone necessary flow regimes to promote recovery of listed species. As proposed, the decision tree framework appears asymmetrical, assuming initial permit conditions require "high outflows" apparently defined as those currently required (under Biological Opinions and other measures) and scientific work under the decision tree process allows one or both spring and fall outflow requirements to change to "low outflows," allowing for increased exports. No provision is made for increasing flow requirements above the BDCP proposed high outflow scenario. [Footnote 13: BDCP Public Draft, Chapter 3, section 3.4.1.4.3]</p>	
1755	26	<p>The Implementation Office Lacks the Necessary Capacity and Authority to Implement Conservation Measures 2 through 22:</p> <p>The role of the Implementation Office, headed by the Program Manager and governed by the Authorized Entities Group, is to "ensure that the commitments in the BDCP are carried out in a timely and efficient manner." [Footnote 14: BDCP Public Draft, [Section] 7.1.1.3.] Unfortunately, the Implementation Office proposed in BDCP is not designed for implementation. Section 15.0 of the Implementing Agreement describes an organization with no legal status, no full time staff, and no independent budget. The Implementation Office is excluded from involvement with construction or operations of SWP and/or CVP facilities except for assembling information on activities and does not administer the Adaptive Management and Monitoring Program.</p> <p>While the Implementation Office is tasked with coordinating funding, developing budgets, work plans and schedules, writing reports, and promoting public awareness, the Office has no authority to make even the most minor of decisions or to compel any specific action. Any action ultimately is the responsibility of others.</p> <p>The Implementing Agreement states that the Program Manager fulfills "the staffing needs of the Implementation Office by drawing from existing personnel at DWR, Reclamation State and Federal Water Contractors Agency (SFWCA), and from other sources." [Footnote 15: See IA [Section] 15.2.4.3, page 58.] However, it is unclear whether "borrowed" staff are assigned full-time to the Implementation Office, or the duration of their assignment. The size of the Implementation Office staff is left to the Program Manager. Neither the BDCP nor the Implementing Agreement provides any specificity as to the requisite skills for each position -- or necessary staffing capacity. Thus, there is no enforceable assurance to guarantee the Implementation Office staff will have both sufficient time and sufficient professional competencies to adequately implement Conservation Measures 2 through 22.</p> <p>The Implementation Office also is charged with ensuring that future public policy decisions</p>	<p>There will be no Implementation Office under Alternative 4A since the preferred project no longer includes an HCP/NCCP. For more information on the BDCP, including information on funding, governance structure, and the implementing agreement, please see Master Response 5.</p>

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		<p>do not conflict with BDCP permit terms, a role elaborated on at length in the BDCP Public Draft. [Footnote 16: The Implementation Office is charged with representing the permit terms in relationships with other agencies in the BDCP Public Draft, Chapter 6, sections 6.3, 6.4 and 6.5, plus in Chapter 7 sections 7.2, 7.3 and 7.4.] Those permit terms will include critical water operations decisions. Future regulations -- starting with Delta flow criteria -- and possible future projects -- such as expanding Shasta Reservoir -- are expected to conform, or align with BDCP objectives after it is permitted. [Footnote 17: See BDCP Public Draft, Chapter 6, section 6.4.4: "... new state and federal regulatory requirements are likely to be adopted that affect the Delta, such as new Delta flow criteria issued by the State Water Resources Control Board, or additional water quality criteria issued by EPA... if ESA or CESA compliance is required of a project, an assessment will need to be conducted regarding its consistency with the BDCP. The Implementation Office will work closely with project proponents or regulatory agencies to ensure that the project or new regulatory requirements are consistent with the BDCP." The extended discussion in this section is more specific than the list of other permits likely to be required found in Chapter 7 at Section 7.1.8.] The skills required for tracking projects which could affect BDCP permits and then for resolving conflicts are quite different than those required to implement a conservation measure. These activities will compete for money and time with the responsibility to complete conservation measures.</p> <p>The functions of the Implementation Office are likely to require more funding than the projected \$336.4 million over the 50 year permit term. These costs are said to be based on a staffing plan developed for BDCP, but no information is provided to justify the 41 to 57 FTE or specific skills identified for the positions. [Footnote 18: See BDCP Public Draft, Chapter 8, section 8.2.4, page 8-52, lines 17-22 and Section 8A.2.1, page 8.A-82, lines 8-10.] This sum represents 7.1 percent of the total costs of Conservation Measures 2-11, just one component of the work of the Implementation Office. By comparison, an analysis of grants from the ERP program for seven identified restoration projects in the Delta found that the category of "planning" represented 21.3 percent of total expenditures. [Footnote 19: Author's calculations of costs for grants identified as going to projects in: McCormack-Williams, Suisun Marsh, Liberty Island, Dutch Slough, Yolo Bypass, Staten Island, and the Cosumnes/lower Mokelumne/Grizzly Island complex.]</p> <p>Section 15.2 of the Implementing Agreement assigns coordination, information gathering and report writing responsibilities to the Implementation Office but no decision making authority to act on information gathered is given to the Implementation Office. Monitoring of performance is of little value unless resulting information is used in decision making. As noted earlier, staffing the Implementation Office with no "permanent" employees compromises capacity to implement conservation measures, especially Conservation Measures 2-11, which require specific professional competencies. As noted above, neither the BDCP nor the Implementing Agreement specifies the skills required of any position in the Implementation Office. This staffing plan also reduces capacity for effective oversight of progress on those same conservation measures.</p> <p>Rather than an arbitrary designation or creation of a new Implementation Office, a better and more accountable vesting of authority of an "Implementation Office" would be the establishment of such an office/authority within the Department of Fish &amp; Wildlife (DFW). Such vesting of authority to achieve conservation outcomes within the BDCP would be consistent with the role and responsibility of the Department in implementing other Natural Community Conservation Plans (NCCPs).</p>	

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1755	27	<p>Funding Concerns Render Implementation of Conservation Measures 2 through 22 Problematic:</p> <p>BDCP is an ambitious project of multiple components which will be costly to implement. With any project of this scale, uncertainty surrounds estimates of future costs. However, project applicants under Natural Community Conservation Plan are responsible for accurate projections of the costs of proposed conservation measures and for identifying funding sources. It is important that financing and implementation roles and specific responsibilities of the project proponents and the State of California and the federal government are clearly defined within the BDCP. This is particularly true with regard to the financing of conservation actions included in the plan and the available information raises questions that inadequate financing is available to successfully implement the habitat conservation measures (2-11) proposed in BDCP. From our analysis, three problems are evident:</p> <ol style="list-style-type: none"> <li>1. The current cost projections are likely to prove to be too low;</li> <li>2. Sources of revenues to cover current projected costs are tenuous; and</li> <li>3. Restoration cost estimates should be based on range of potential costs not prescriptive amounts for conservation measures</li> <li>4. Cost shares appropriately borne by water contractors may be shifted to public sources unless funding responsibilities are more explicitly defined.</li> </ol> <p>It is particularly important that expectations and roles for long term conservation funding are well-defined within the scope of the BDCP. We underscore this point as it will be important to ensure that the water contractors/Permittees pay their fair share of conservation plan elements, and recognizing that, over time, proposed conservation measures will be modified, some may be abandoned as infeasible, and other measures may be advanced as part of the wider conservation strategies. Additionally, measures within the BDCP may 'crowd out' other conservation purposes, adding competition for funds with other public purposes.</p>	<p>Please see Master Response 5 regarding the adequacy of the proposed project cost estimates, including an explanation of how the risk of cost overruns has been minimized. Master Response 5 also describes the cost contingencies that have been built into the cost estimates.</p> <p>Master Response 5 also discusses the adequacy of the funding strategy in light of the regulatory requirements from the state and federal wildlife agencies to issue take authorization for the project.</p> <p>The funding responsibilities of the participating state and federal water contractors are described in BDCP Chapter 8 and are listed in Table 8-41. These funding responsibilities will be made binding through final agreements with DWR and Reclamation according to the final cost allocations. These binding agreements may include amendments to water contracts with the State Water Project and Central Valley Project.</p> <p>Also note, 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>
1755	28	<p>The Current Cost Projections are Likely to Be Too Low:</p> <p>There is a very high probability that costs estimates provided in BDCP for conservation measures other than Conservation Measure 1, Water Facilities and Operations, are too low and the costs for Conservation Measures 2-11 could be significantly higher than those costs projected in the Public Draft. The BDCP cost estimate is inconsistent with other ecosystem restoration efforts in the Delta; inappropriately assigns a fixed value to the cost instead of a more conservative range of anticipated costs; and does not include an appropriate contingency adjustment, considering the high degree of uncertainty surrounding the expected ability of the proposed ecosystem restoration measures to achieve their objectives.</p>	<p>Please see response to Comment 1755-27.</p>
1755	29	<p>Cost Estimates Likely to Prove Too Low: BDCP Proposes Spending Less on Habitat Conservation Measures Than is Currently Spent on Ecosystem Restoration:</p> <p>BDCP proposes to spend \$4.4 billion on Conservation Measures 2 through 11 over the 50 year term of the permit, which comes to \$88 million annually. However, to put this in perspective, average annual ecosystem restoration expenditures of \$131 million are shown in the last three years (2010-11 through 2012-13) of the "Cross Cut Budget" established</p>	<p>Please see response to Comment 1755-27.</p>

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		<p>under CalFed to track state and federal expenditures on Delta projects. Another way of looking at this is that BDCP proposes to spend about 72% of what is currently being spent annually on habitat projects in and around the Delta. While the recent ecosystem restoration expenditures appear to be higher than historic patterns through CalFed [Footnote 20: CalFed ERP reports do not provide a clear accounting of spending on ecosystem restoration, with the most recent End of Stage 1 Executive Summary (2010) showing expenditures of \$629 million (Table 1, page 3). file:///C:/Users/John/Downloads/End_of_Stage_1_Rpt_Exec_Smry.pdf. However, an earlier analysis by the Department of Finance identified ecosystem restoration expenditures of \$907 million through FY 2004. Table 7, page 9. http://www.calwater.ca.gov/content/Documents/CBDA_Fiscal-Review_Final%20.pdf. The DOF included expenditures 1996-2000 pre-ROD (\$238 million) but also found larger expenditures FY 2000 through 2004 than cited in the CalFed ERP report said to include an additional four fiscal years (\$669 million vs. \$629 million). The DOF is more authoritative and that number is increased to \$1 billion, estimating an additional \$93 million over six fiscal years and approximately \$88 million annually on "Delta" ecosystem projects over the available history.], only limited progress has been made on ecosystem restoration in the Delta. No rationale is offered in BDCP as to how the proposed funding will result in more ecosystem protection and restoration than has been achieved under CalFed and the Ecological Restoration Program administered by the California Department of Fish and Wildlife.</p>	
1755	30	<p>Methodology for Cost Estimates of Restoration Are Ambiguous and Do Not Adequately Incorporate Actual Experiences from Past Delta Restoration Efforts:</p> <p>Significantly, for Conservation Measures 2 through 11, BDCP proposes activities, anticipated costs and time schedules, without analysis of past efforts in the Delta. Without a baseline analysis of what has been accomplished in the past decades of work in the Delta, with some measures of habitat protected or restored, time required and costs actually incurred, it is hard to project an informed judgment of the potential costs of BDCP proposals. Because of the high stakes in terms of Delta ecosystem function, species survival or recovery, and potential costs to other parties, a proper baseline analysis of past ecosystem restoration efforts in the Delta is essential to informing anticipated costs and schedules under the BDCP.</p> <p>The cost estimates characterized in the BDCP are the result of substantial work based on cost models of "other large, complex regional HCPs and NCCPs." [Footnote 21: See Draft BDCP, Chapter 8, section 8.2.2, page 8-3, lines 28-31.] Upon examination, however, only two applications of such comparative analyses were found, while others appear to have been made in an ad hoc manner. A few examples illustrate this point:</p> <ol style="list-style-type: none"> <li>1. Cost estimates of Conservation Measure 4, Tidal Natural Communities Restoration, used information from completed or recently permitted projects in the entire estuary (e.g., Petaluma Marsh, or South Bay Salt Ponds). The costs for Conservation Measure 4 are projected to be \$1,909,700,000 over the 50 year project period.</li> <li>2. Cost estimates of Conservation Measure 11, Natural Communities Enhancement and Management relied on comparison to other habitat projects. [Footnote 22: See Appendix 8.A, section 8.A.1.1.11, pages 8.A-50 through 8.A-53.] The costs for Conservation Measure 11 are projected to be \$217,883,356 over the 50 year project period.</li> <li>3. The cost factors used for land acquisition (fee simple title or easement) and habitat establishment are particularly risky as they form a large portion of projected total costs. As</li> </ol>	Please see response to Comment 1755-27.

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		<p>the projected land acquisition cost estimates for CM2-11 total \$998.52 million, an underestimate or overestimate has significant potential consequences.</p> <p>Cost estimates for the "construction and planting" components of CM10 are attributed to a single personal communication of "comparable restoration projects occurring in and around the Delta (Gause pers. comm.)" by an individual working on mitigation banks. An average cost of \$6,625/acre for restoration and revegetation is used with no analysis presented of costs attributed to identified restoration projects to show this is a plausible valuation. [Footnote 23: See Draft BDCP, Chapter 8, section 8.2.3.10, page 8-23, lines 7-9. Publicly available information shows that the firm with which this individual is associated has completed a single mitigation bank of direct relevance, the Cosumnes Floodplain Mitigation Bank of 472 acres for riparian, perennial, and seasonal wetlands for flood mitigation. <a href="http://www.wesmitigation.com/pdf/wes-soq.pdf">http://www.wesmitigation.com/pdf/wes-soq.pdf</a>.]</p> <p>No structured analysis of implementation processes identifying lessons from large ecosystem restoration projects appears to have been undertaken in BDCP documents. Some local examples are illustrative of the challenges associated with ecosystem restoration in the Delta. [Footnote 24: Planned restorations of large scale estuaries similar to the Delta are rare. Possible analogs in the United States include the Chesapeake Bay, the South Florida (Everglades) Ecosystem, and the Louisiana Coastal Wetlands. All have encountered significant delays, conflicts over goals, strategies and measures of success and cost increases beyond original projections.]</p> <p>The first stage Ecosystem Restoration Project (ERP) under CalFed made little progress on effective ecosystem restoration of aquatic habitats. The Ecosystem Restoration Program End of Stage 1 report (2010) counts acquisition of Liberty Island and passive restoration of over 1000 acres of tidal perennial habitat as the most notable success, joined with acquisition of Dutch Slough properties with a potential for nearly 400 acres of tidal marsh habitat. The ERP also contributed to restoration and protection of wetlands in San Pablo Bay and Suisun Bay. However, funding from CalFed focused mostly on structural ecosystem remediation projects, such as fish screens or fish passage. [Footnote 25: See the discussion in the Ecosystem Restoration Program End of Stage One Report, April 28, 2010. Chapter 9. Page 9-1.4. <a href="file:///C:/Documents%20and%20Settings/John%20Kirlin/My%20Documents/Downloads/End_of_Stage_1_Rpt_Ch9.pdf">file:///C:/Documents%20and%20Settings/John%20Kirlin/My%20Documents/Downloads/End_of_Stage_1_Rpt_Ch9.pdf</a>]</p> <p>Under the "Fish Restoration Program Agreement" (2010) associated with current exports from the Delta, the state and federal water contractors are obligated to create or restore a minimum of 8,000 acres of intertidal and associated subtidal habitat in the Delta and Suisun Marsh, among other actions. The Fish Restoration Annual Report (2012-2013) lists the constraints and impediments encountered in implementing the Program. These constraints and impediments, "all of which are present in the Delta," (FRPA 2010) include [Footnote 26: <i>Ibid.</i>, page 13.]:</p> <ol style="list-style-type: none"> <li>1. Staff Resources</li> <li>2. Conflicting Land Use Priorities</li> <li>3. Land Acquisition</li> </ol>	

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		<p>4. Potential Impacts to Neighboring Lands</p> <p>5. Permitting</p> <p>6. Scientific Uncertainty</p> <p>7. Hydrologic and Numerical Modeling</p> <p>Limited progress has been made on the Fish Restoration Program. \$20 million has been spent to date, with in-Delta spending mostly focused on Prospect Island, Suisun Marsh and Cache Slough. However, the largest share of funds, \$12 million, has been spent outside of the Delta at Battle Creek, a pattern which also occurred under CalFed.</p> <p>A total of \$205 million is projected to be necessary over 10 years to implement the Fish Restoration Program, which calculates to \$25,625/per acre restored, inclusive of land acquisition and all other identified costs. [Footnote 27: See Fish Restoration Program Annual Report, 2010-2013. Page11-12.  <a href="http://www.water.ca.gov/environmentalservices/docs/frpa/FRP_Annual_Report_Final_and_signed_Jan%202014.p df">http://www.water.ca.gov/environmentalservices/docs/frpa/FRP_Annual_Report_Final_and_signed_Jan%202014.p df</a>] By comparison, the BDCP cost per acre is calculated to be only \$14,674/acre. [Footnote 28: The BDCP does not summarize costs into a total per acre. The average cost per acre was calculated as follows: fee title land acquisition from Table 8.2 (\$4367), increased by 10% for transaction costs (to \$4804/acre), to which restoration costs of \$6625 an acre are added, then adjusted by 20% for contingencies (reaching \$13,714/acre) to which the projected Implementation Office costs (7% of all restoration costs) are added, to reach \$14,674/acre.]</p>	
1755	31	<p>The BDCP Cost Estimates Should Be Based on a Range of Potential Costs, Not a Fixed Amount:</p> <p>Ecosystem restoration efforts in the Delta have rarely reached "completion" at which costs incurred or results are known. Considered within the framework advanced by AACE International (association of professional cost estimators which establishes best practice guidelines and certifies cost estimators) used in BDCP [Footnote 29: See: <a href="http://www.aacei.org/">http://www.aacei.org/</a>], the uncertainty risks of ecosystem restoration must be recognized as very high, as seen in these guidelines. [Footnote 30: See: AACE International Recommended Practice No. 17R-97. Cost Estimate Classification System, Rev. November 29, 2011. Page 6. Emphasis and references to BDCP added. <a href="http://www.aacei.org/non/rps/17R-97.pdf">http://www.aacei.org/non/rps/17R-97.pdf</a> . BDCP used this classification system in estimating costs of CM1 and elsewhere. Regarding use for CM 1 see Chapter 8.2.3.1, page 8.12, lines 7-11.]</p> <p>Expected Accuracy Range:</p> <p>The accuracy range of an estimate is dependent on risk. A number of characteristics of the estimate input information and the estimating process are systemic risks. The extent and the maturity of the input information is a highly important determinant of accuracy of cost projections. There are also systemic risk factors besides the available input information that also greatly affect estimate accuracy measures. Primary among these are the state of technology in the project and the quality of reference cost estimating data.</p> <p>State of technology -- technology varies considerably between industries, and thus affects estimate accuracy. The state of technology used here refers primarily to the programmatic</p>	Please see response to Comment 1755-27.

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		<p>or technical uniqueness and complexity of the project. Procedurally, having "full extent and maturity" in the estimate basis deliverables is deceptive if the deliverables are based upon assumptions regarding uncertain technology. For a "first-of-a-kind " project -- and the BDCP may well fit this category -- there is a lower level of confidence that the execution of the project -- especially at the scale of restoration proposed within the BDCP -- along with all necessary mitigation will be successful</p> <p>Quality of reference cost estimating data -- accuracy is also dependent on the quality of reference cost data and history. It is possible to have a project with "common practice" in technology, but with little cost history available concerning projects using that technology. In addition, the estimating process typically employs a number of factors to adjust for market conditions, project location, environmental considerations, and other estimate-specific conditions that are often uncertain and difficult to assess. The accuracy of the estimate will be better when verified empirical data and statistics are employed as a basis for the estimating process, rather than assumptions applied thus far.</p> <p>Instead of projecting a range of costs reflecting uncertainty and risk, BDCP assumes a fixed cost for various categories of activities, commonly allocated into one or more of three time periods over 50 years. [Footnote 31: See Chapter 8, "Implementation Costs and Funding Sources," Table 8-6 through Table 8-16, corresponding to CM2-CM11, pages 8-17 through 8-35.] The methodology for determining cost projections is unclear in the BDCP as Conservation Measures 2 through 11 are displayed in Excel spread sheet calculations, but the underlying basis for various values provided are not defined. The implied precision by presenting the cost estimate in this manner is seductive, but raises significant questions about the underlying cost basis and analysis from which these numbers are derived.</p>	
1755	32	<p>The BDCP Cost Estimate Does Not Allow a Sufficient Contingency Adjustment -- and May Create Potential for Cost Shifting for Habitat Measures:</p> <p>The 20 percent contingency adjustment applied to most of the BDCP habitat related conservation measures is too low given the uncertainties of ecosystem restoration. [Footnote 32: See Draft BDCP, Chapter 8, section 8.2.2.2, page 8-4.] The conveyance facilities cost estimate is characterized as a Class 3 estimate and a 35.9 percent contingency is included for construction costs in the BDCP cost estimates. [Footnote 33: Chuck Gardner, "BDCP Update SCVWD," dated January 27, 2014. <a href="http://mavensnotebook.com/wp-content/uploads/2014/04/Chuck-Gardner-Presentation_SCVWD-Update-1-27-14_revised-version.pdf">http://mavensnotebook.com/wp-content/uploads/2014/04/Chuck-Gardner-Presentation_SCVWD-Update-1-27-14_revised-version.pdf</a>, slide titled "Cost Estimate"(slide 22?). For the construction contingency calculation for water facilities, see Draft BDCP, Chapter 8, section 8.2.3.1, Table 8-5, page 8-14. A 20% contingency is used for land acquisition in the same table.] The five point scale is applied to reflect "certainty" calibration with the Class 3 cost estimate at the midpoint in the scale; Class 1 estimates are deemed very accurate and Class 5 estimates are the least accurate, requiring provision of larger contingencies in cost estimates. Given multiple uncertainties about actual restoration costs and outcomes -- and the importance of providing for the experimental application of adaptive management strategies -- a more prudent approach would be to apply the Class 5 cost estimate basis until more Delta restoration projects are completed, and more is learned about both effective technologies and costs, including long-term habitat stewardship. Plainly, while the existing worksheet of estimated costs for restoration provides some basis for comparison of different projects, the risks of significantly inaccurate cost estimates are substantial. Standard cost estimates for restoration projects including projections applied by AACE International (an association of professional cost estimators) suggests variances in the range</p>	Please see response to Comment 1755-27.

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		<p>of +100/-50% or even wider. [Footnote 34: See AACE International. 2011. Cost Estimate Classification System, page 2. <a href="http://www.aacei.org/non/rps/17R-97.pdf">http://www.aacei.org/non/rps/17R-97.pdf</a>]</p> <p>This analysis suggests that costs projected in the BDCP Public Draft are almost certainly conservative with respect to long range costs of restoration, probably by tens of millions of dollars, and potentially underestimated by billions of dollars. Estimating costs for ecosystem restoration at the scale proposed in the BDCP is challenging as there is little successful experience in the Delta or elsewhere that approaches the complexity, variety and scale.</p> <p>However, how these cost estimates were developed falls short of standards for open analysis of conservation costs and responsibilities -- and lacks a substantive basis to clearly allocate costs and responsibilities to project Permittees and transparently indicate how much responsibility will be absorbed by state and federal agencies.</p>	
1755	33	<p>The Assurances Offered in the Implementing Agreement Create Potential for Open-Ended Liability:</p> <p>A critical discussion of costs and funding responsibilities is found at section 13.0 of the Implementing Agreement, where a series of statements attests to the reasonableness of the cost projections and the likelihood that the combination of specified contractor funding, combined with expected state and federal funding is sufficient to provide a basis on which permits can be issued. Provisions in the BDCP may shield contractors from financial risks if the ecosystem restoration conservation measures cost more than projected amounts or fail to achieve projected benefits. Funding responsibilities of contractors are narrowly specified by purpose; amounts to be paid by contractors for other than Conservation Measure 1 are set as absolute limits in several locations in the Implementing Agreement, including sections 13.1.1, 13.1.3, 13.2, 14.0, 14.1, 14.2, and 14.3.3. Similar provisions are in the Public Draft. Those provisions may effectively cap contractor obligations and also serve as an inducement to underestimate costs in the Plan.</p> <p>The BDCP Public Draft provides an inadequate analysis of sources of revenues to cover projected costs for Conservation Measures 2-11, (which as noted above are likely to increase significantly). It is known that many activities undertaken under CalFed and the Ecosystem Restoration Program were funded from bonds where remaining balances are low, and prospects for additional funding in the near term are at best uncertain. [Footnote 35: According to the Legislative Analyst's Office, only about 10% of the water bonds approved by voters since 2000 remain unobligated and while proposed bond bills are pending in the legislature, they have not been enacted and require voter approval. See: <a href="http://www.lao.ca.gov/reports/2014/budget/resources/resources-environmental-protection-022114.aspx">http://www.lao.ca.gov/reports/2014/budget/resources/resources-environmental-protection-022114.aspx</a>]</p> <p>Recognizing that habitat restoration will be an on-going action under the BDCP, long-term funding including funding from bonds will likely occur on an intermittent basis. It is also likely that other sources including General Fund expenditures will be necessary to meet relatively near-term restoration obligations under the Plan. In order to build public confidence and support for various funding mechanisms, it is necessary to define and provide more explicit assurances about restoration funding obligations that will be absorbed by the water contractors. The cost projections provided raise significant questions with regard to regulatory assurances limiting additional financial obligations of the water contractors.</p> <p>The water contractors' funding obligations for all measures, other than CM1, appear to be</p>	Please see response to Comment 1755-27.

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		<p>capped at \$903 million. Included within the other conservation measures are actions for which the water contractors would be fully responsible even in the absence of the BDCP. It appears, however, that any cost overruns would become the obligation of the public, resulting in a potential shift of funding responsibility from the water contractors to the public. A full accounting of current obligations from existing Biological Opinions and other measures that are carried forward into BDCP is an absolutely necessary first step in understanding any shifts in payer responsibilities from contractors to the public. [Footnote 36: The water contractors' obligation to restore 8,000 acres of tidal marshlands as required by the US Fish and Wildlife Service OCAP BiOp offers an example of possible cost-shifting. This action is included under CM4, which anticipates restoration of 65,000 acres of tidal wetlands. Table 8-37 of the BDCP lists the water contractors' obligations for CM2, CM4-10, CM12, and CM22 collectively at \$269 million. Table 8-41 lists the water contractors' obligation for CM4 as \$240.6 million, representing 12.6% of the total cost for CM4, based on a calculation showing that 8,000 acres represents approximately 12.6% of 65,000 acres. If the BDCP truly caps the water contractors' obligation, any cost overruns that exceed the water contractors' \$240.6 million obligation will be shifted to the public.]</p> <p>The state and federal water contractors' obligation for "All mitigation costs associated with the permanent and temporary impacts of construction and operations of the facility (CM1)" is acknowledged. [Footnote 37: See BDCP Public Draft, Chapter 8, section 8.3.4.1, SWP and CVP Funding Responsibilities, page 8-73, lines 16-17.] However, no listing of those mitigation obligations is provided in the chapter on costs and funding sources. A total cost of \$903.3 million (undiscounted 2012 \$) is provided for mitigation measures, mostly associated with facility construction. These costs are not identified in the available projection of CM 1 costs although the BDCP states there is some "overlap" with current obligations under BiOps, and also notes that any additional costs associated with mitigation identified in the EIR/EIS or mitigation costs associated with other laws or regulations are not included in the \$903.3 million. [Footnote 38: See Chapter 8.3.4.1.2, page 8-77, including footnote 55.] The text in the "rationale" column of Table 8-41, "BDCP funding provided by participating state and federal water contractors," includes discussion of allocation of some mitigation costs, but not intelligibly. [Footnote 39: At pages 8-74 through 8-76.] An accurate identification of mitigation obligations and currently estimated costs is an absolute requirement in identifying total BDCP costs and assigning the uncapped obligation for those mitigation costs to state and federal water project contractors.</p>	
1755	34	<p>Impacts to Greater Sandhill Crane and Other Species on Staten Island:</p> <p>The BDCP and the Draft EIR/EIS acknowledge both substantial impacts to the Greater Sandhill Crane and other species using Staten Island as habitat, and the high degree of uncertainty surrounding the response of these species to the significant construction impacts expected to occur from locating the tunnels under Staten Island. Given the uncertainties, we feel a more conservative approach needs to be taken (using the precautionary principle) by assuming the worst -- that cranes may abandon sites or the island permanently -- and appropriate mitigation is essential to avoid this outcome. With this in mind, the most feasible means of avoiding the significant impacts is to realign the tunnels away from Staten Island. However, in the event that Alternative 4 is approved and permitted, and recognizing that construction of CM1 is not likely to occur for several years, we strongly recommend that experimental measures begin as soon as possible to determine whether the proposed mitigation measures will achieve the intended benefit.</p>	<p>The commenter feels a conservative approach need to be taken in addressing crane impacts, that tunnels should be realigned away from Staten Island, and that proposed mitigation measures be implemented prior to construction to determine their effectiveness if impacts can't be avoided on Staten Island. While Chapter 12 of the Draft EIR/EIS contains a thorough and extensive assessment of BDCP potential effects on sandhill crane, including impacts that would occur on Staten Island, DWR staff and consultants have continued to work with USFWS and CDFW staff to explore additional ways to lessen the risk of adverse effects on cranes using Staten Island. Since issuance of the 2013 Draft EIR/EIS, the proposed project has been modified to address concerns of impacts to Sandhill Cranes on Staten Island. Specifically, the project has been modified minimize construction activities on Staten Island by removing: tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines. Furthermore, the avoidance and mitigation measures that address sandhill cranes have been substantially modified (see EIR/EIS Appendix 3B). For more information regarding sandhill crane mitigation please see Master Response 17. For more information on mitigation measures, please see Master Response 22.</p>

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1755	35	<p>Background of The Nature Conservancy’s Involvement at Staten Island:</p> <p>Staten Island is owned by The Nature Conservancy and managed by Conservation Farms and Ranches (a non-profit affiliate of TNC) as a diversified agricultural property with a specific focus on testing and implementing wildlife-friendly agricultural practices. Specifically, Staten is one of the most important sites in California for wintering Greater Sandhill Cranes (Ivey and Herziger 2003) and management at Staten is focused on improving habitat conditions for this species. In addition, the island is managed to provide valuable habitat for waterfowl, shorebirds, and other wildlife (Shuford et al. 2013, May and Associates 2003).</p> <p>TNC acquired fee title to Staten Island in 2001 with two grants of funding provided by the State of California. The California Natural Resources Agency granted California Proposition 204 funds to TNC because the Agency determined that the protection of Staten Island would implement the CALFED Ecosystem Restoration Program by (1) protecting critical agricultural wetlands for continued use by significant numbers of migratory birds; and (2) allowing development and refinement of economically viable wildlife-friendly agricultural practices. DWR granted California Proposition 13 funds to TNC because DWR determined that the protection, management and use of Staten Island for wildlife-friendly agricultural purposes would (1) preserve agricultural land; (2) protect wildlife habitat; and (3) protect the floodplain area from inappropriate or incompatible development.</p> <p>The land use at Staten Island is restricted by a Conservation Easement Deed granted by TNC to DWR in 2001. Allowing the siting of the tunnels, or any of the related improvements, on Staten Island, as proposed by DWR, would violate the terms of the Conservation Easement, which TNC cannot legally do under the terms of the Conservation Easement. California law specifies that conservation easements are permanent (California Civil Code, [Section] 815 et. seq.). In order to proceed with its proposed tunnel project, DWR would have to condemn the easement it holds on Staten Island. In an eminent domain proceeding to condemn property that is already in public use, DWR would have to establish that the proposed new use is more necessary than the existing public use (California Code of Civil Procedure, [Section] 1240.60 et. seq.). Ironically, the Department would find itself in the position of having to defend the conservation easement that it is attempting to condemn.</p>	<p>Project alternatives and related facilities have been optimized to include fewer conveyance features on Staten Island.</p> <p>DWR is very familiar with the Conservation Easement on Staten Island that this comment describes. DWR holds the Conservation Easement and, as the Conservation Easement holder, has oversight to ensure that TNC’s management of Staten Island is consistent with the purposes of the Easement. The purposes of the Conservation Easement are to protect “multiple and complementary benefits” that are defined in the Easement, specifically (i) agricultural land preservation, (ii) wildlife habitat protection, (iii) protection of floodplain from potential inappropriate and incompatible development, and (iv) potential future flood management improvements. In preserving and protecting these “multiple and complementary benefits,” it is also the Conservation Easement’s purpose to encourage and promote wildlife-friendly agricultural practices on the Island. The Conservation Easement does not prohibit the siting of water conveyance facilities or related improvements on Staten Island. The Conservation Easement actually provides for various land uses so long as the land uses are consistent with the Conservation Easement’s purposes. The project design changes and the performance standards set forth in the EIR/EIS ensure that Alternative 4A would not interfere with the “multiple and complementary benefits” that the Conservation Easement protects or wildlife-friendly agriculture on Staten Island. Thus, the Proposed Project is consistent with the Conservation Easement’s purposes.</p> <p>Please refer to Master Responses 17, and 18 for more information about the terrestrial resources, sandhill cranes, and agriculture.</p>
1755	36	<p>BDCP and the Draft EIR/EIS Do Not Adequately Address Impacts of the BDCP on Greater Sandhill Crane</p> <p>The Greater Sandhill Crane is listed as threatened under the California Endangered Species Act (California Department of Fish and Wildlife 2013). Staten Island has a long history of supporting a large and dense population of both foraging and roosting sandhill cranes. Approximately 1,500 Greater Sandhill Cranes use Staten, which is a significant portion of the population that uses the Pacific Flyway, and represents at least 15% of the entire Central Valley Population of Greater Sandhill Cranes (Ivey and Herziger 2003). During the core wintering period from November to January, Staten has been reported to hold over half of foraging cranes using the North Delta region and consistently supports high numbers of feeding cranes through the winter (TNC 2014 unpublished data, Ivey and Herziger 2003).</p> <p>Human disturbances can influence crane selection of roost sites (i.e. Armbruster and Farmer 1981, Norling et al. 1990, Norling et al. 1992, Sparling and Krapu 1994). Highly variable impacts due to additional human disturbance factors, such as noise and lighting, will occur as a result of various construction activities, and these factors were not fully considered in the Draft EIR/EIS in estimating total habitat loss. The Draft EIR/EIS acknowledges the many limitations to our understanding of how cranes will respond to the numerous types of</p>	<p>Please see response to Comment 1755-34.</p> <p>The effects of light and noise on sandhill cranes have been analyzed in the Draft EIR/EIS (for Alternative 4, this is Impact BIO-71: Indirect Effects of Plan Implementation on Greater Sandhill Crane, page 12-2209), and compensation for indirect effects on cranes has been proposed that would be in place prior to disturbance (AMM20 Greater Sandhill Crane, Appendix 3B of the EIR/EIS).</p>

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		<p>disturbances and habitat modifications that will result from construction activities and post-construction operations and maintenance as a result of implementing the BDCP. As stated in the BDCP "[T]he construction of the conveyance facility will require a substantial amount of heavy equipment over prolonged periods, and is expected to generate noise, require nighttime lighting, and create visual disturbance" (BDCP Public Draft, Nov. 2013, pg. 5J.D-1). In addition, there will be disturbances from pumping plants to discharge water from dewatering wells.</p> <p>Given that sandhill cranes are highly sensitive to disturbance (particularly new forms of disturbance to which they have not become acclimated), are highly site faithful, and that there is relatively little information on how they will respond to such prolonged construction activities as anticipated by the BDCP, the precautionary principle dictates that existing roost and foraging sites on Staten may be entirely or largely abandoned. Mitigation for this potential impact needs to be addressed explicitly and include some experimentation to test the effectiveness of the mitigation well before construction begins.</p> <p>In addition, the loss of habitat needs to be considered as part of the cumulative effects that include the loss of habitat already resulting from land conversion to unsuitable foraging crops that are affecting the forage availability and carrying capacity of the Delta overall for Greater Sandhill Cranes (Ivey 2014). Given the large proportion of Greater Sandhill Cranes that habitually return to Staten Island, the impacts on the island need to be considered in this context, accounting for the cumulative impacts across the Delta. For example, forced movement of sandhill cranes off Staten to increasingly limited areas for roosting and foraging habitat off the Island not only create challenges for ensuring the cranes identify and utilize new habitat management sites, but it also may result in increased competition between geese and cranes when they concentrate where suitable habitat remains undisturbed. The dynamics of interspecific competition from displacement of suitable habitat due to BDCP have not been accounted for.</p> <p>The combination of these activities over such a large footprint through the densest and most traditional use areas of the sandhill crane in the Delta has the potential to significantly impact the population wintering in the region.</p>	
1755	37	<p>Construction Activities Will Result in Significant Loss of Habitat:</p> <p>Despite the claim that a majority of the habitat loss on Staten would be temporary, the activities, impacts, and footprint described may be significant enough to affect the population using Staten over the long-term, since there is insufficient evidence in the Draft EIR/EIS that the impacts to cranes have been fully mitigated.</p> <p>Under Alternative 4 (the BDCP preferred alternative), construction activities would result in significant disturbances, loss of habitat, and alteration of habitat on much of Staten Island. Out of 8,815 acres of modeled crane habitat on Staten, the Draft EIR/EIS estimates that 1,283 acres of permanent foraging habitat and 132 acres of temporary habitat will be directly lost. This represents 47% of the total permanent losses of foraging habitat for the entire project (BDCP Public Draft, Nov. 2013, pg. 5.6-42). The habitat that would be lost has very high value to Greater Sandhill Cranes (Ivey et al. 2011), because of the high forage value of the crops themselves and their location as keystone features in the traditional crane use landscape of the Delta (Ivey and Herziger 2003). The BDCP effects analysis claims that there will be no loss of permanent roosting habitat as a result of BDCP (BDCP Public Draft, Nov. 2013, pg. 5.6-40); however, this does not effectively account for the impact of construction activities planned immediately adjacent to multiple permanent roosting areas</p>	Please refer to response to Comment 1755-34.

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		<p>on Staten. Furthermore, the Draft EIR/EIS provides no assessment of the habitat impact of building settling/holding ponds and discharging water from dewatering wells, which would severely impair the irrigation capacity for providing forage crops and creating roosting habitat.</p> <p>Even if construction activities are restricted to the daytime, the disturbance likely would eliminate suitable foraging areas. Loss of this foraging habitat could affect crane use of roost sites (Parrish et al. 2001, Sidle et al. 1993). Data from radio-tagged cranes in the Delta also indicate that cranes sometimes spend diurnal time on their night roosts (Ivey et al. 2011), therefore daytime construction activity could deter them from using the area.</p> <p>The Draft EIR/EIS also does not adequately address the larger habitat effects resulting from impacts to the viability of Staten Island’s farming operation and irrigation practices, essential for providing suitable crane foraging and roosting habitat on the entire island.</p>	
1755	38	<p>Construction Activities Will Result in Fragmented Habitat:</p> <p>The plan does not effectively account for the effects of fragmentation on the integrally connected foraging/roosting habitat network of the Staten landscape and the surrounding area. Many factors influence the distribution of crane roosting sites, including landscape factors such as the amount and suitability of nearby foraging habitat (Parrish et al. 2001, Sidle et al. 1993) and nearby disturbances. This could greatly impact the suitability of roosts for Greater Sandhill Cranes, which prefer to forage close to their roosting sites (Ivey et al 2011). Habitat changes occurring within the daily flight radius of crane roosting sites may affect crane presence or abundance at roosts, even if local conditions at roosts remain suitable (Shaskey 2012, Ivey 2014).</p>	See response to comment 1775-34.
1755	39	<p>Impacts from Transmission Lines are Not Adequately Addressed:</p> <p>The BDCP and the Draft EIR/EIS fail to adequately consider the impacts of transmission line bisecting crane roosting areas on the northern portion of Staten Island, including the impacts of road construction, road traffic, transmission line construction, and ongoing required maintenance.</p> <p>Under the preferred alternative, the proposed "temporary" transmission lines on Staten either bisect or are close to permanent crane roosting areas. [Footnote 40: In addition to causing increased crane mortality, the lines could also result in increased mortality of other bird species that use Staten habitats.] These lines will be well within the flight altitude of cranes (BDCP Public Draft, Nov. 2013, pg. 5.6-45). These lines would not be removed until after construction is complete (BDCP Public Draft, Nov. 2013, pg. 5.6-45). Cranes could be exposed to further increased risks of striking these new lines if they are boosted from their roosting sites due to nearby construction or maintenance related activities. Pogsoson and Lindstedt (1988) suggest that deaths due to powerline collisions near roost sites were related to birds’ lack of familiarity with the location of lines. Although the Performance Standard is that there be "no net increase in bird strike hazard to Greater Sandhill Crane populations in the Plan Area" (BDCP Public Draft, Nov. 2013, pg. 3.C-54; emphasis added), there still could be significant increases to the bird strike hazard on Staten Island. The proposed mitigation measure of placing bird strike diverters is not adequate as they are only partially effective in decreasing mortality (Brown and Drewien 1995), particularly under foggy conditions. New transmission lines should be placed in lower bird-strike risk zones. While this option is suggested in the avoidance and minimization measures, the actual plan specifications indicate lines will be placed in high bird strike risk zones. This conflict needs to</p>	<p>See response to comment 1755-34.</p> <p>In addition, the RDEIR/RDEIS states that one or a combination of measures described in AMM20 Greater Sandhill Crane will be implemented to avoid mortality of greater sandhill cranes associated with transmission lines that are constructed as part of the project. These proposed measures contain the measures proposed by the commenter .</p> <p>Please review mitigation measures specifically related to greater sandhill crane impacts and the MMRP. Also refer to Master Response 17.</p>

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		<p>be addressed.</p> <p>Also unknown is how birds will respond to attempts to shift the location of their long-term traditional roosting sites that are near new transmission lines. Greater Sandhill Cranes have strong philopatry to traditional use areas, with some individual color-marked birds known to have used the same local wintering areas for at least 18 years (Ivey and Herziger 2003). Even if water is moved to encourage roosting in other areas, cranes have habitual flight patterns in the areas the new lines are proposed.</p>	
1755	40	<p>Location of Reusable Tunnel Material will interfere with habitat</p> <p>The maps illustrating the Preferred Alternative do not indicate any attempts to minimize the footprint of Reusable Tunnel Material (RTM) storage areas in crane foraging habitat, even though Avoidance and Minimization Measure 6 specifically requires that the area used for RTM storage be minimized in crane foraging habitat and that these areas completely avoid crane roost sites (BDCP Public Draft, Nov. 2013, pg. 5.6-42). The Preferred Alternative shows a significant RTM footprint on Staten Island, in areas with high crane foraging activity that are nestled between core permanent roosting sites on the island. Furthermore, "there is no assurance that the material will eventually be moved" (BDCP Public Draft, Nov. 2013, pg. 5.6-42).</p>	Please see response to Comment 1755-34.
1755	41	<p>Some Construction Activities May Occur during the Highly Sensitive Wintering Season:</p> <p>It is unclear what construction activities will actually occur within the fall/winter time period of crane activity, leaving great uncertainty about how severe project impacts will be on the population. Minimization measures generally state that "construction will be minimized during the sandhill crane wintering season to the extent practicable in light of project schedule and cost and logistical considerations" (BDCP Public Draft, Nov. 2013, pg. 3-C-54). This is extremely vague, with no guarantees for what will actually occur during the crane wintering period, especially given the likelihood that cost and logistics will be given high priority. We strongly recommend no project activities occur during the crane wintering period from September through March, as suggested by Ivey and Herziger (2003). Because of the high degree of uncertainty around how cranes may respond, the proposed minimization measure that "construction that cannot be completed prior to the commencement of the wintering season will be started before September 15 or after March 15" (BDCP Public Draft, Nov. 2013, pg. 3.C-54) may not be sufficient. If migrating cranes arrive to new habitat alterations and disturbances on Staten in September, they could respond by avoiding using much of the island.</p>	Chapter 12 of the EIR/EIS specifically addresses the effects of construction noise and visual disturbance on sandhill cranes in Impact BIO-71 and specific measures to avoid and minimize effects on sandhill cranes are identified in AMM 20 in Appendix 3B of the EIR/EIS. For more information regarding sandhill crane mitigation please see Master Response 17.
1755	42	<p>Impacts from Nighttime Lighting Have Not Been Adequately Addressed:</p> <p>Many construction activities would need to occur day and night, and "evening and nighttime construction activities would require the use of bright lights" (BDCP Public Draft, Nov. 2013, pg. 5J.D-12). As the BDCP acknowledges, nighttime lighting could boost cranes off their roosting sites and/or significantly affect their quality of nocturnal rest and sense of photoperiod, increasing the risk of transmission line collisions, may affect timing of foraging, and may "interfere with breeding and migration (Navara et al. 2007, Titulaer et al. 2012, Santos et al. 2010, Hill 1992)" (see BDCP Public Draft, Nov. 2013, pg. 5.J.D-12). Given the significance of the potential impacts, the proposed use of light barriers to minimize the impact of lighting is not adequate. Mitigation must be based on the assumption that cranes will respond by abandoning these sites.</p>	Chapter 12 of the EIR/EIS specifically addresses the effects of lighting on sandhill cranes in Impact BIO-71 and specific measures to avoid and minimize effects on sandhill cranes are identified in AMM 20 in Appendix 3B of the EIR/EIS. For more information regarding sandhill crane mitigation please see Master Response 17.

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1755	43	<p>Impacts from Noise Have Not Been Adequately Addressed:</p> <p>Construction noise could also cause cranes to abandon foraging and roosting habitat. Construction noise of greater than 50 dBA is expected to extend 500 to 5,250 feet from the edge of construction activity (BDCP Public Draft, Nov. 2013, pg. 5J.D-7). Although artificial noise barriers may be installed to decrease noise levels at foraging habitats, "the visual effects of noise barriers on sandhill cranes are unknown" (BDCP Public Draft, Nov. 2013, pg. 3-C-56). It is also unclear if there would be combined auditory impacts of pile driving with other construction activities occurring simultaneously.</p> <p>The Draft EIR/EIS acknowledges an absence of data on the effects of noise on cranes, and "it is not possible at this stage to draw definitive conclusions regarding the sandhill crane response to the increased noise environment expected to be caused by this project" (BDCP Public Draft, Nov. 2013, pg. 5.J.D-10), leaving great uncertainty regarding the scope of the effects and any benefits of the proposed minimization and mitigation measures. Unless work is conducted completely outside of the crane wintering period from September to March, the minimization measures described may be insufficient to mitigate for the negative effects. The combined area of affected habitats constitute most of the island, rendering it virtually impossible to avoid noise impacts to crane habitat on Staten. Because of the potentially significant impacts, we believe that a very conservative approach is needed and mitigation must assume the possibility that cranes will simply abandon the island.</p>	<p>Please see response to comment 1755-41 regarding the impact of noise on greater sandhill crane.</p>
1755	44	<p>Impacts of Long-Term Operations and Maintenance:</p> <p>The effects of long-term operation and maintenance of permanent facilities were also not effectively addressed. "Maintenance of the aboveground water conveyance facilities could result in ongoing but periodic post-construction noise and visual disturbances that could affect Greater Sandhill Crane use of surrounding habitat" (BDCP Public Draft, Nov. 2013, pg. 5.6-44). Avoidance and minimization measures did not directly address long-term impacts of facilities operation and maintenance on the island. The exact timeline and type of effects on Temporary Surface Impact areas were also not explained, as well as any potential long-term impacts on these areas. It is also unclear how long the Safe Haven Work Area will be in use and what long-term footprint it could have. This area is located in the center of Staten Island, immediately adjacent to the core permanent crane roosting area on the island. Also, the proposed tunnel location goes right under some permanent roosting areas. The Draft EIR/EIS does not address what measures will be taken if the underground equipment breaks and digging from the surface is required for repairs at the location of an active crane roost site.</p>	<p>The commenter expresses concern that long term operational effects were not effectively addressed, in particular on Staten Island from the Safe Haven work areas. Each impact discussion includes the effects of long-term operations and maintenance. The safe haven work areas on Staten Island are all temporary and would be in operation for 9 to 12 months (see page 3-145 of the FEIR/FEIS for a discussion of the dimensions of safe haven work areas). These work areas would be restored to pre-existing conditions, which would mean agricultural fields. AMM 20 Greater Sandhill Crane further addresses the commitment to avoiding direct construction related loss of crane roosting habitat (see Appendix 3K of the FEIR/FEIS). AMM 20 also includes measures to avoid and minimize potential effects from lighting and visual disturbance during construction as well as operations and maintenance.</p> <p>For more information regarding sandhill crane mitigation please see Master Response 17.</p>
1755	45	<p>Alternative Habitat May Not Be Effective Mitigation:</p> <p>It is also unknown whether the creation of supplemental foraging and roosting habitat would be effective in mitigating disturbance and destruction of habitat during construction, as no evidence was provided on the effectiveness of this approach. The establishment of 700 acres of "supercharged" roosting and foraging habitat will also only occur during the construction period. Greater Sandhill Cranes are very loyal to their wintering sites and less adaptable to change (Ivey et al. 2011) and they have very small winter home ranges, with average flights from roost sites to foraging areas less than 1 mile (Ivey et al. 2011). Thus, there is no guarantee that the cranes will select new roosting sites created just prior to construction. Alternative sites would need to be close enough to existing traditional use</p>	<p>The commenter states their opinion that proposed protection and creation of crane roosting and foraging habitat will not be effective in minimizing the effects. As shown in Table 12-4A-28 in Chapter 12 of the EIR/EIS, of the 4,484 acres of crane habitat permanently and temporarily impact only 2,047 acres fall into the high to very high value greater sandhill crane habitat (foraging and roosting) and yet at least 4,584 acres of high to very high value foraging habitat, with at least 80% of this maintained as very high-value habitat, would be protected within 2 miles of known roost sites. This would result in an increase the amount of high to very high value foraging habitat lost. In addition, for the 92 acres of roosting habitat lost, 95 acres of roosting habitat within 2 miles of existing permanent roost sites would be created with an additional 320 acres of roosting habitat created in minimum patch sizes of 40 acres within the Greater Sandhill crane winter use area. This mitigation, which is specifically for construction-related losses, would increase the amount of high to very high value foraging habitat and roosting habitat in the greater sandhill crane winter that is</p>

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		<p>areas, near sufficient amounts of suitable foraging habitat, and not affected by significant disturbance in their roosting/foraging landscape. We are also concerned that habitat enhancement on small areas in compensation for larger areas of noise disturbance (0.1 acre of foraging habitat per acre of foraging habitat within the 50 dba noise contour), will be insufficient. For instance, Wang (2011) reported that red-crowned crane movement to a less disturbed area did not mitigate impacts of disturbance, as the concentration of birds in less disturbed areas resulted in continued high levels of vigilance due to intraspecies competition, and thus continued lost foraging time. We recommend that acres of foraging habitat impacted by noise be mitigated at a 1:1 ratio.</p> <p>The proposed project impact footprint on Staten is so extensive that it could significantly disrupt traditional crane activity patterns on the island. Any mitigation must include early experimentation with creating and testing response to supercharged habitats to test whether birds can be attracted to them. This will allow for critical adjustments to mitigation before construction begins and before significant adverse impacts are realized.</p>	<p>specifically managed for this species.</p> <p>Impact BIO-70 addresses the effects of construction noise on sandhill cranes and refers to the measures in AMM 20 that would avoid and minimize effects on sandhill crane.</p> <p>For more information regarding sandhill crane mitigation please see Master Response 17.</p>
1755	46	<p>Impacts to Other Species:</p> <p>In addition to loss of crane habitat, the proposed BDCP would result in significant loss of habitat on Staten for burrowing owls, Swainson’s hawks, tricolored blackbirds, western pond turtles, and white-tailed kites, as well as other species that use the island (May and Associates 2003, Shuford et al. 2013). In particular, the plan’s preferred alternative has significant permanent impacts to many acres of burrowing owl habitat, including being immediately adjacent to or burying some recently and regularly active burrowing owl nest sites on Staten. The project footprint has a significant effect on existing interior dirt levees, some of which are actively used by burrowing owls. The construction activities would remove occupied habitat, displace nesting and wintering owls, and/or fragment occupied habitat. Long-term maintenance and operation of conveyance facilities, with associated rodent abatement programs around conveyance facilities, could also have deleterious impacts to burrowing owls. The Draft EIR/EIS erroneously claims that no burrowing owls have been found on Delta islands. On the contrary, over many years Conservation Farms and Ranches personnel have regularly observed burrowing owls nesting on levees within Staten Island. Additionally, the proposed project plan would cause permanent and temporary loss of Swainson’s Hawk foraging habitat and increased impacts of disturbance on their foraging and nesting areas. Proposed powerlines and construction activities bisect known foraging and nesting areas for Swainson’s Hawks on Staten Island.</p>	<p>The commenter expresses concern over impacts to wildlife on Staten Island.</p> <p>Since issuance of the 2013 Draft EIR/EIS, the proposed project has been modified removing: tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines. Please see Master Response 17 for more information regarding impacts to biological resources. For more information on mitigation measures, please see Master Response 22.</p> <p>The commenter incorrectly characterizes the analysis of burrowing owl in Chapter 12 of the EIR/EIS by stating “Draft EIR/EIS erroneously claims that no burrowing owls have been found on Delta islands”. The EIR/EIS does not contain this statement. Figure 12-29 in Chapter 12 shows CNDDDB and DHCCP records for burrowing owl on several Delta islands and shows modeled habitat occurring across Delta islands.</p>
1755	47	<p>The proposed BDCP design will also severely impair the larger farming operation on Staten Island and the viability of the majority of the island to be farmed in the future. These effects have not been properly accounted for. It would be impossible to continue a viable agricultural operation on the island with the proposed project footprint and associated activities. This would significantly impact the ability of the farm to provide wildlife habitat -- including for crane foraging and roosting habitat -- on the island as a whole.</p>	<p>Since issuance of the 2013 Draft EIR/EIS, the proposed project has been modified to minimize construction activities on Staten Island by removing: tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines. Please refer to Master Response 18 regarding the evaluation of impacts on agriculture.</p>
1755	48	<p>Flooding and Irrigation:</p> <p>There is no explanation of how flooding and irrigation capacity will be maintained during and after project activities, however at least 19 miles of irrigation and canal ditches on Staten would be affected by the proposed project. Water delivery to fields would be impaired, as well as the movement of high water away from crops. Avoidance and minimization measures say to "stage CM1 activities on Staten Island such that they do not</p>	<p>Since issuance of the 2013 Draft EIR/EIS, the proposed project has been modified to address concerns of impacts to Sandhill Cranes on Staten Island. Specifically, the project has been modified to minimize construction activities on Staten Island by removing: tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines. Therefore, the 19 miles of irrigation and canal ditches noted as potentially affected under Alternative 4 in the DEIR/EIS will no longer be affected.</p> <p>Please also see Appendix 3B of the RDEIR/RDEIS for information about environmental commitments related</p>

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		<p>disrupt flooding and irrigation to the extent that Greater Sandhill Crane habitat will be reduced during the crane wintering season" (BDCP Public Draft, Nov. 2013, pg. 3.C-59). However, flooding and irrigation capacity for the island would also need to be maintained outside of the crane wintering season in order to grow the crops that provide crane habitat. The project would require farm fields to be re-leveled and the irrigation system would need to be redeveloped for the whole island in order for the farming operation to continue. This would be an extremely high cost.</p>	<p>to drainage.</p>
1755	49	<p><b>Pumping Structure and Dewatering:</b></p> <p>There is no indication on how the pumping structure of the island would work under modified conditions, and how dewatering would effectively be accomplished during tunnel construction. Pumping would be required 24 hours/7 days a week due to the high water table. The impacts of dewatering the island were not addressed, and methods for irrigating crops and providing habitat while dewatering were not presented. There was no explanation of the size, location, and magnitude of dewatering and leeching ponds, their associated impact on habitat and farming capacity. There was also no assessment of the potentially significant impact that dewatering could have on the organic peat soils and further subsidence. In addition, access to residential well water for the many residents on the island would be impaired, and it is unclear how this would be remedied.</p>	<p>As described in Chapter 7, Groundwater, and Chapter 14, Agricultural Resources, in the Draft EIR/EIS and the BDCP/California Water Fix Partially Recirculated Draft EIR/Supplemental Draft EIS, DWR would conduct site-specific groundwater analysis to determine the extent of the dewatering activities along the conveyance route. DWR would consult with local agencies.</p> <p>As described under Impact GW-1 in Chapter 7, Groundwater, in the Draft EIR/EIS, the impacts due to dewatering during construction of the conveyance facilities may not be able to be fully mitigated to a level of less than significant or become not adverse because replacement water supplies may not meet the preexisting demands or planned land use demands of the affected party, including agricultural production wells. The effects of dewatering could be reduced through installation of seepage cutoff walls during dewatering. The effects on agricultural activities are addressed under Agricultural Impact AG-2 (see Chapter 14, Agricultural Resources, in the Draft EIR/EIS). The impacts to agricultural production due to temporary construction activities that could result in disruption of irrigation or drainage infrastructure, and could jeopardize agricultural production. Implementation of Mitigation Measures AG-1, GW-1, GW-5, and WQ-11 will reduce the severity of these impacts by implementing activities such as siting project footprints to encourage continued agricultural production; monitoring changes in groundwater levels during construction; monitoring seepage effects; relocating or replacing agricultural infrastructure in support of continued agricultural activities; identifying, evaluating, developing, and implementing feasible phased actions to reduce EC levels; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through off-site easements or other agricultural land conservation interests. However, these impacts remain significant and unavoidable and adverse to agricultural resources.</p> <p>For additional information regarding significant and unavoidable impacts, please see Master Response 10.</p>
1755	50	<p><b>Impacts from storing Reusable Tunnel Materials [RTM]:</b></p> <p>It is unknown what, if any, areas can effectively be restored to preconstruction conditions and whether Reusable Tunnel Materials can eventually be removed. Assuming that viable soil for farming could even be returned to the high RTM areas in the future, it may be impossible to effectively irrigate those high plateaus. The Draft EIR/EIS does not analyze whether, if the RTM can be eventually removed, there may be any permanent impact on the storage area. Significant compaction of peat is likely. The Draft EIR should consider the feasibility of bringing in organic peat suitable for farming from other areas to the island.</p>	<p>Construction of the proposed tunnels would result in approximately 27 million cubic yards of RTM. It is anticipated that up to 99 percent of this could be suitable for beneficial reuse following draining/drying and physical and chemical characterization. A preliminary laboratory study was recently done by DWR to assess the geotechnical and chemical characteristics, and the plant suitability properties of mixtures of soil samples from the proposed tunnel footprint and three different soil conditioners. Based on the results of the geotechnical tests it was determined that RTM may be suitable for strengthening Delta levees identified for maintenance and repair, as structural fill for construction of the proposed water conveyance facilities, and as fill on subsiding Delta islands. Chemical characterization of the laboratory RTM samples showed no indication that RTM would require handling as hazardous waste material, and that RTM would meet conditions acceptable for unrestricted land uses. However, additional risk assessment studies would need to be done if RTM were to be considered for use where people would be in contact with the soil, either directly (e.g., through skin contact) or indirectly (e.g., as airborne particulate, or as leachate in surface or drinking water). The planting suitability test results indicated that RTM may be suitable to sustain habitat growth and for agricultural use, and therefore could be used for habitat restoration. Please see Master Response 12 for more information on RTM.</p>
1755	51	<p><b>Other Construction Impacts:</b></p>	<p>Since issuance of the 2013 Draft EIR/EIS, the proposed project has been modified to address concerns of impacts to Sandhill Cranes on Staten Island. Specifically, the project has been modified to minimize</p>

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		<p>The proposed location of the conveyor belt through Staten Island would impede a majority of the agricultural operations on the island. The impacts of the associated structures and required maintenance of the conveyor have not been addressed. The impact of increased road traffic, new road construction, and transmission line construction on the operation and activities occurring at the grain silos and dryer have not been addressed. The proposed alternative shows these construction activities occurring adjacent to these essential farming facilities, which could have severe impacts to the farming operation. The Draft EIR/EIS does not address the potential risk of bentonite leaking to the surface as a result of the proposed subsurface tunneling project. This has been observed with other subsurface tunneling work in the area (i.e. McCormack Williamson Tract). Bentonite leakage could contaminate the soil and render the ground unsuitable for farming.</p>	<p>construction activities on Staten Island by removing: tunnel launch facilities, large reusable tunnel material storage areas, a barge landing site, and high voltage power lines.</p> <p>DWR will perform a series of geotechnical investigations along both the selected water conveyance alignment and at locations proposed for facilities or material borrow areas. The work to be performed will constitute a subsurface investigation program to provide information required to support the design and construction of the water conveyance facilities. Geotechnical investigations will be conducted to identify surface and subsurface conditions necessary to complete design of the water conveyance facilities. DWR has developed a Draft Geotechnical Exploration Plan (Phase 2) for the Alternative 4 conveyance alignment (MPTO). The proposed subsurface exploration will focus on geotechnical considerations of the following aspects of water conveyance facility development: engineering considerations, construction-related considerations, permitting and regulatory requirements, and seismic characterization considerations. Known and suspected contaminated soils may require further sampling and analysis to determine appropriate handling in accordance with regulations in place at the time of construction.</p> <p>For more information on agricultural impact mitigation, please see Master Response 18.</p>
1755	52	<p>Impacts from Increased Salinity:</p> <p>The effect of increased salinity of irrigation water on the continued viability of the farm operation on Staten has not been addressed. Salinity levels are expected to increase throughout the Delta and salinity will move inland as a result of new North Delta diversions. This will compound with sea level rise and decreased upstream runoff already occurring due to climate change, causing the low salinity zone in the Delta to migrate even further east and upstream. The State is required to assure that water quality is adequate to fully protect existing agricultural uses in the Delta; however, further salinity impacts are highly likely with climate change and sea level rise.</p>	<p>The water quality assessment of the diversion of Sacramento River water under the project alternatives addresses effects on salinity-related parameters in the Delta, including electrical conductivity (EC), and compliance with related agricultural use objectives in the Bay-Delta Water Quality Control Plan and degradation relative to these uses in Impact and WQ-11 (EC) in Chapter 8, Water Quality. Where significant impacts to agricultural beneficial uses would occur due to the alternative, as opposed to other forces including climate change and sea level rise, mitigation to lessen those impacts is provided. Master response 14 provides more information on the projects effects on water quality.</p> <p>Further, the proposed project has been modified since publication of the Draft EIR/EIS to Alternative 4A, which would have less than significant impacts on salinity-related parameters.</p>
1755	53	<p>Impact on Levee Integrity and Flood Risk to Staten Island:</p> <p>The EIR/EIS does not analyze the effects that the large subterranean tunnels and their construction could have on the integrity of the perimeter levee that protects Staten Island. Any compromising of levee integrity would cause significant risks to island residents, the viability of the farming operation, and the maintenance of suitable habitat for sandhill cranes and other wildlife on the island. There are also numerous features proposed to be constructed on or adjacent to Staten levees (i.e. shaft, roads, temporary transmission lines, temporary surface impacts, and a barge unloading facility), however the impact of these features on levee integrity and continued levee maintenance has not been evaluated. Also, the BDCP does not address how much additional agricultural land could be lost due to levee strengthening and maintenance activities that would be necessary due to the project.</p> <p>Changes in the groundwater table could affect levee foundations, particularly where there is underlying peat. All alternatives involving tunneling under Staten could impact levees in the southern end of the island, which are the most vulnerable.</p>	<p>Potential effects on levees from Alternative 4A, the preferred project, are discussed in the EIR/EIS Chapter 9, Geology and Seismicity, in Impacts GEO-4, GEO-5, GEO-8, GEO-9, GEO-12, GEO-13, GEO-14, and GEO-15. Also described are the codes and standards that would be adhered to with respect construction and operations that would be implemented to minimize the potential for levee failure. Additionally, if the proposed project makes any modification to a levee that is part of the federal flood control system, the proposed lead agencies must secure approval from USACE through the Section 408 permitting process. See Appendix 6A regarding flood control in the Delta.</p>
1755	54	<p>Impact to Staten Island Residents:</p> <p>With such intense multi-year construction activities occurring on Staten, the effect of emissions and construction dust on the health of both people and wildlife living on the island have not been addressed. There are many families with children living on the island, and nearly all of them are long-term island residents. According to the project footprint, three homes on Staten Island would have to be removed. Several additional houses are</p>	<p>The conveyance alignment for the preferred alternative, Alternative 4A, has been revised since the public Draft EIR/EIS was released. Changes made to the alignment result in fewer impacts related to CM 1 on Staten Island. For additional information about changes to the footprint, please see Chapter 3 and the associated detailed Mapbooks. For construction emissions and fugitive dust generation from construction activities, a detailed Health Risk Assessment was conducted for all action alternatives (See Appendix 22C). Other issues that may affect houses located adjacent or near construction activities are covered in various resource area chapters, such as Chapter 23, Noise; Chapter 19, Transportation; Chapter 20, Public Services;</p>

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		<p>located immediately adjacent to areas where several types of heavy construction activities are proposed. These activities would cause severe disruptions, increased health and safety concerns, and significant reductions in the quality of life for those island residents. Also, what other risks would be posed to the houses located adjacent or near construction activities?</p> <p>Overall, the preferred alternative (Alternative 4) would have significant negative impacts to the wildlife habitat, farming operation, and residents of Staten Island.</p>	<p>and Chapter 25, Public Health.</p>
1755	55	<p>McCormack-Williamson Tract (MWT) Potential Impacts of Concern Related to the BDCP:</p> <p>McCormack-Williamson Tract (MWT) is an approximately 1,600-acre "island" in the North Delta. The Nature Conservancy (TNC) purchased MWT in 1999 using federal funds granted from the US Fish and Wildlife Service to TNC through the CALFED Bay Delta Program. When TNC purchased MWT it also became the sole landowner in Reclamation District (RD) 2110.</p> <p>MWT is protected by approximately 8.8 miles of non-project levees and has flooded several times over the last few decades. Due to its location, geography, and ecological history, MWT has been viewed as a prime site for restoration of fresh water tidal marsh, seasonal wetlands and riparian forest.</p> <p>TNC and RD 2110 are collaborating with DWR to complete planning and permitting for the MWT Levee Modification and Habitat Development Project (LMHDP). LMHDP objectives include improving flood control in the North Delta and benefiting aquatic and terrestrial habitats, species and ecological processes. DWR has executed a Project Funding Agreement with RD 2110 to complete LMHDP planning, design, and permitting.</p> <p>The LMHDP design includes removing portions of the MWT levee system (see North Delta Flood Control and Ecosystem Restoration Project FEIR Alternative 1-A [Footnote 41: <a href="http://www.water.ca.gov/floodsafe/fessro/levees/north_delta/docs/">http://www.water.ca.gov/floodsafe/fessro/levees/north_delta/docs/</a>]) to tidally inundate the interior. BDCP Alternative 4 includes a tunnel alignment, safe haven work area, and temporary access road through the MWT interior (see Draft EIR/EIS Chapter 03, Figure M3-4: Sheet 5 of 15). The Draft EIR/EIS has not adequately addressed the potential conflicts between these two projects.</p>	<p>Implementation of the McCormack Williamson Tract Levee Modification and Habitat Development Project is under development and is considered in this EIR/EIS as a cumulative impact project. The safe have work area and associated access road would not be permanent fixtures on the McCormack-Williamson Tract and may not necessarily be in conflict with other planned or future activities on the island. DWR will engage and coordinate with programs implementing projects in the Plan Area to ensure compatibility with the proposed project and to avoid any potential conflicts.</p>
1755	56	<p>Inundation Following Construction of Levee Modification and Habitat Development Project:</p> <p>An analysis of McCormack-Williamson Tract (MWT) topography and tidal influence indicates that most of the MWT interior would be inundated at the mean tide level following levee removal. The area inundated will include the area proposed for the tunnel alignment, safe haven work area, and temporary access road indicated in BDCP Alternative 4 for the MWT interior. Assuming Levee Modification and Habitat Development Project (LMHDP) construction proceeds in advance of any potential work on the BDCP tunnels, DWR needs to address the apparent conflict between the proposed BDCP Alternative 4 features and inundation anticipated on MWT following LMHDP construction.</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 an HCP. Alternative 4A has been developed in response to public and agency input.</p> <p>DWR will engage and coordinate with programs implementing projects in the Plan Area to ensure compatibility with the proposed project and to avoid any potential conflicts. Implementation of the McCormack Williamson Tract Levee Modification and Habitat Development Project is under development and is considered in this EIR/EIS as a cumulative impact project.</p>
1755	57	<p>Impacts to Levee Stability:</p> <p>The Nature Conservancy's understanding is that construction of the tunnels proposed by BDCP Alternative 4 would likely affect surface elevation along the tunnel alignment (e.g., subsidence associated with dewatering during tunnel construction). Subsidence of levees over the tunnel alignment could increase levee management costs and even cause a levee</p>	<p>Please note that the preferred alternative is now Alternative 4A and no longer includes an HCP or Conservation Measures. Alternative 4A has been developed in response to public and agency input.</p> <p>Potential effects of tunneling operations on the above ground are addressed in Appendix 6A, Section 6A.6.3.2, FEIR/EIS, and Chapter 9, Geology and Seismicity. DWR would ensure that the geotechnical design recommendations are included in the design of project facilities and construction specifications and are</p>

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		to fail. The Draft EIR/EIS needs to address how tunnel effects on levees will be resolved.	properly executed during construction to minimize the potential effects from settlement. DWR has made this conformance and monitoring process an environmental commitment of the BDCP/BDCP/CWF, as described in Appendix 3B, FEIR/EIS.
1755	58	<p>Impacts to Transmission Tower Stability:</p> <p>An existing transmission tower on McCormack-Williamson Tract is directly in the path of the tunnels proposed by BDCP Alternative 4. That tower (approximately 2000 ft. in height) is supported by several guy wires. Subsidence due to tunnel construction could impact the transmission tower, its operations building, and guy wire anchors. The Draft EIR/EIS needs to address how tunnel effects on buildings and structures will be resolved.</p>	<p>Section 13.1 of the Conceptual Engineering report identifies a number of locations and facilities that the MPTO/CCO alignment crosses or that potentially interferes with features that may be sensitive to settlement. Included among these facilities are buildings and overhead power/electrical transmission line towers.</p> <p>Impact GEO-3 has been revised to include a discussion of the professional publications and other literature that would be used to estimate the expected site-specific surface settlement caused by tunneling and the maximum allowable settlement for individual facilities. As now discussed in GEO-3, preliminary settlement calculations have been carried out for critical cross sections along the tunnel alignment and all show impacts within an acceptable range (a maximum settlement between 0 and 2.9 inches)</p>
1755	59	<p>[ATT 3:</p> <p>Panel Review of the Draft Bay Delta Conservation Plan:</p> <p>Prepared for the Nature Conservancy and American Rivers]</p>	This comment describes an attachment to the comment letter. Comments contained in the attachment are addressed starting with response to comment 1755-59.
1755	60	<p>Do Operations Shift Delta Exports from Dry to Wet Years?</p> <p>The BDCP calls for increasing exports in wet years and reducing them in dry years, taking advantage of the increased operational flexibility provided by two points of diversion. This would reduce stress on Delta ecosystems during drier periods. Our analysis of simulation data suggests that while there is some increase in flexibility, export operations are highly constrained by upstream consumptive uses, regulations that cover reservoir operations, and flow and water quality standards. This greatly limits the anticipated benefit associated with operation of the dual facilities. Despite these limitations, as modeled, there is an increase in exports in wet years. In most dry years there are no substantial changes over No Action Alternative conditions. However, significant improvements in outflow and Old and Middle River (OMR) conditions occur in some dry years. We were unable to identify the regulatory or operational requirements that would lead to this.</p>	<p>The Final EIR/EIS includes model results specifically for Alternative 4A, the preferred alternative under NEPA and CEQA proposed project, as compared to Existing Conditions and No Action Alternative. These results indicate that total Delta exports under Alternative 4A are approximately 6 percent higher in wet years and 3 percent lower in critical dry years as compared to the No Action Alternative. The results also indicate that total Delta exports under Alternative 4A are similar in wet years and 18 percent lower in critical dry years as compared to the Existing Conditions which includes changes due to climate change, sea level rise, and population growth.</p> <p>As shown in Appendix 5A of the EIR/EIS, Section C, the Old and Middle River flows under Alternative 4A would be more positive than under the No Action Alternative and Existing Conditions except in April and May except in wet years. The model results indicate that in these months, the increased reverse Old and Middle River flows would range from approximately -119 to -427 cfs under Alternative 4A as compared to the No Action Alternative, and from approximately -72 to -748 cfs as compared to the Existing Conditions which includes the effects due to climate change and sea level rise. The purpose and need of the proposed project was to minimize the effects of the action alternatives as compared to the No Action Alternative, and not to eliminate reverse flows.</p> <p>As described in the EIR/EIS, the proposed project will be submitted to numerous state and federal agencies for approval, including to USFWS and NMFS under the Endangered Species Act, State Water Resources Control Board and U.S. Environmental Protection Agency under the Clean Water Act, and Delta Stewardship Council under the Delta Reform Act. The approvals and permits that will be issued by these agencies could result in changes to the proposed project that is presented in the EIR/EIS. However, implementation of the proposed project in accordance with these approvals and permits would be consistent with the related legislation referred to in this comment.</p> <p>For more information please refer to Master Response 44 regarding conveyance facility operations and Master Response 28 regarding operational criteria and OMR flows. Regarding the modeling approach taken, please see Master Response 30.</p>
1755	61	Are Impacts of the North Delta Facility Fully Assessed and Mitigated?	Regarding the comment on adaptive management, DWR, Reclamation, DFW, USFWS, NMFS, and the public water agencies will establish a robust program of collaborative science, monitoring, and adaptive

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		<p>The Plan identifies multiple near- and far-field effects of the new North Delta facility. Based on our review of the Effects Analysis, the Plan appears to have properly identified the most significant effects and uses standard models to assess them. Outmigrating juvenile winter-run and spring-run Chinook salmon will be most heavily affected, leading, in the absence of mitigation, to significant losses. The Plan identifies multiple mitigation strategies, including pulse flow management, predator control, entrainment reduction, non-physical barriers, real-time operations and development of alternative migration pathways (Yolo Bypass). With the exception of benefits from diverting juveniles onto the Yolo Bypass, all of these mitigation approaches have high uncertainties. Done well and successfully, however, they appear to offset the losses associated with operation of the North Delta facility. The high outflow scenario appears most protective of conditions upstream of the Delta and adjacent to the new facility. However, mitigation actions are unlikely to contribute significantly to recovery of these species. Additionally, successful mitigation is likely to occur only if there is a robust adaptive management and real-time operations program. The Plan provides neither.</p>	<p>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>Adaptive management is also discussed in Master Response 33. Also see Master Response 44, Decision Tree, regarding real time operations. For more information on mitigation please see Master Response 22.</p>
1755	62	<p>Are In-Delta Conditions Significantly Improved for Smelt?</p> <p>We evaluated the modeling results in the Plan and conducted our own modeling to evaluate how changes in conditions would affect delta and longfin smelt. As noted, we are concerned that anomalously positive (or less negative) Old and Middle River flows and high Delta outflows that are modeled during some drier years would not actually occur in real operations. However, if these changes were to occur we find modest to significant improvement in in-Delta conditions for smelt, particularly delta smelt. Improvements in OMR flows under high outflow scenarios and low outflow scenarios result in substantial decreases in entrainment, leading to significant increases in long-term survival percentages for delta smelt. However, increases in spring and fall outflow under HOS lead to small increases in longfin smelt abundance and modest improvements in delta smelt recruitment.</p>	<p>The analysis of effects on delta and longfin smelt are addressed in Chapter 11 of the Final EIR/EIS and Master Response 17 addresses flows operational criteria and effects on fish and aquatic resources.</p> <p>Also see response to comment 1755-60.</p>
1755	63	<p>Will Pelagic Fishes Benefit from Floodplain and Tidal Marsh Restoration?</p> <p>The Plan properly identifies food limitation as a significant stressor on smelt populations in the Delta. The Plan proposes to address this issue by restoring physical habitat to help subsidize pelagic food webs. Based on simple modeling and comparison with other systems, we find that restored floodplains and tidal marshes are unlikely to make a significant contribution to smelt rearing habitat conditions. Tidal marshes can be sinks or sources of food, with most appearing to be sinks for zooplankton. The Plan appears to be too optimistic about the benefits of tidal marsh and floodplain restoration. However, there is likely to be benefit where fishes have direct access to productivity, such as in Cache Slough. In addition, although benefits for listed pelagic fishes are low, there are broad benefits of restoration for many aquatic and terrestrial species covered by the Plan.</p>	<p>The Preferred Alternative is now Alternative 4A/California Water Fix, as explained in 1755-6. 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> <p>Additional priority restoration projects will be identified through regional and locally-led planning processes facilitated by the Delta Conservancy. Plans will be completed for the Cache Slough, West Delta, Cosumnes, and South Delta. Planning for the Suisun Marsh region is already complete and a process for integrated</p>

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			<p>planning in the Yolo Bypass is underway. The Delta Conservancy will lead the implementation of identified restoration projects, in collaboration with local governments and with a priority on using public lands in the Delta.</p> <p>Additionally, Chapter 11 of the Final EIR/EIS addresses the effects of restored habitat on delta smelt (see Impact AQUA-9) and longfin smelt (Impact AQUA-27).</p>
1755	64	<p>Does the Plan Provide an Effective Governance Structure?</p> <p>We reviewed the proposed BDCP governance structure to evaluate its likely effectiveness in meeting the Plan's goals and objectives. Implementation of BDCP would be overseen by an Authorized Entity Group (AEG) comprising the California Department of Water Resources (DWR), the U.S. Bureau of Reclamation (USBR), and the state and federal water contractors if they are issued incidental take permits pursuant to the BDCP. A Permit Oversight Group (POG), consisting of the U.S. Fish and Wildlife Service (USFS), the National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW), would monitor implementation of the Plan and compliance with the biological objectives and conservation requirements. The draft BDCP includes a 50-year "no surprises" guarantee, as well as other regulatory assurances. We found that, when examined in detail, the draft BDCP blurs the lines between implementation and regulation and grants the permittees unusual decision authority. Additionally, the regulatory assurances in the Plan, especially the "no-surprises" policy, place undue financial responsibilities on the state and federal governments if certain modifications to the Plan become necessary during its 50-year term. Given the complexity of the Delta ecosystem, predicted changes in hydrology, anticipated changes in the Delta not included in the Plan, and significant scientific uncertainties, Plan modifications are likely to be needed in the future.</p>	<p>The plan recognizes that plan modifications may be needed in the future as a result of changes in the environment and scientific uncertainties. Environmental changes are considered as part of "changed circumstances" described in Chapter 6 of the BDCP. If changed circumstances arose, remedial actions would need to be implemented to address those circumstances. Scientific uncertainties are addressed in Chapter 3 as part of the adaptive management and monitoring program. This program was designed to address specific scientific uncertainties related to questions of management importance. Both components of the plan allow for changes to occur. If changes are needed that are more substantial than remedial measures or adaptive management, a plan amendment could be developed and submitted for approval by the state and federal fish and wildlife agencies. The plan amendment process is described in Chapter 6, Section 6.5. Again, as noted in Response to Comment 1755-6, the preferred alternative is now Alternative 4A and no longer includes and HCP.</p>
1755	65	<p>Is There a Robust Science and Adaptive Management Plan for BDCP?</p> <p>The Plan is committed to adaptive management in order to address the high uncertainties. Most of the unresolved issues in the Plan are to be resolved at a future date through adaptive management. A "decision tree" approach is proposed to resolve conflicts over starting operations. We found that the governance structure, whereby the Authorized Entity Group (AEG) may exercise veto authority over changes to the biological objectives and conservation measures, is likely to create disincentives for adaptive management. In addition, a proposed consensus-based Adaptive Management Team made up of Permit Oversight Group, AEG, and scientific community members creates conflicting relationships between decision-makers and providers of key information. The limited information available about the science program suggests that BDCP proposes to develop a wholly new science program that is not integrated, but should be, with existing programs. Finally, our review of the "decision tree" process indicates that it is unlikely to achieve the goal of significantly reducing uncertainties before the north Delta facility is constructed and ready for operation.</p>	<p>This comment addresses Alternative 4/BDCP. The Preferred Alternative is now Alternative 4A/California Water Fix, as explained above in Response to Comment 1755-6.</p> <p>Please see Response to Comment 1755-61.</p> <p>Also see Master Response 33 for more information on adaptive management and monitoring and Master Response 44 regarding the decision tree process under Alternative 4.</p>
1755	66	<p>All parties need to recognize the model uncertainties in BDCP and factor that into decision-making. It is unlikely that actual operations will follow simulated operations.</p>	<p>The basis of the hydrologic and water quality model is the CALSIM II model is a monthly model that incorporates assumptions about daily operational changes. These types of models are the most appropriate to analyze potential changes due to different operational assumptions for the SWP and CVP. However, as described in Appendix 5A of the Final EIR/EIS, these models cannot be used in a predictive manner to define absolute values. Rather, they must be used in a comparative manner to indicate basic changes between alternatives or scenarios and understand the sensitivity of changes that could occur from the Existing Conditions and the No Action Alternative.</p>

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			For more information on modeling please see Master Response 30.
1755	67	Given the high uncertainty over mitigation for the North Delta facility, all mitigation efforts should be in-place and tested before the facility is completed. This includes completion of the Fremont Weir modifications on the Yolo Bypass as well as large scale, significant experiments in real-time flow management, predator control and non-physical barriers.	<p>Mitigation measures will be implemented to reduce significant environmental effects as they occur based on the resource topic and impact mechanism disclosed in the Final EIR/EIS. In some cases mitigation measures are implemented prior to project construction, such as for some noise and visual resource impacts and in other situations mitigation is required during or after construction and operation of the project. Please refer to the MMRP for a discussion of the timing of specific mitigation measures. Also, please note that Alternative 4A does not include modifications to Fremont Weir or the Yolo Bypass.</p> <p>For more information on mitigation measures, please see Master Response 22.</p>
1755	68	The improvements in long-term survival percentages for delta smelt in response to changes in Old and Middle Rivers (OMR) need to be more rigorously evaluated, particularly in light of uncertainties over operations. If further examination supports these findings, operational rules should be developed that insure that the anomalous, significantly improved drier-period OMR and outflow conditions occur.	Please see Master Response 28 for discussion of uncertainties in operations from modeling. Also see response to comment 1755-60 and response to comment 1755-62.
1755	69	The limited benefit derived from changes in outflow under high outflow scenario requires a second look at options for significant increases in outflow, including finding sources of water outside the direct control of BDCP.	<p>The action alternatives only address operations with the existing water rights issued to DWR and Reclamation for operations of the SWP and CVP, in accordance with the Project Objectives and Purpose and Need (see Chapter 2 of the Final EIR/EIS).</p> <p>For more on the project's purpose and need please see Master Response 3. For information on water rights please see Master Response 32.</p>
1755	70	Although we find that marsh and floodplain restoration is unlikely to create the benefits for pelagic fishes described in the Plan, this can only be resolved through experimental restoration projects. These projects need to be designed and implemented rapidly to resolve this issue.	Please see response to comment 1755-63.
1755	71	Substantial revision of BDCP's governance structure is needed. This includes giving full regulatory authority to the Permit Oversight Group, while limiting their involvement in implementation.	<p>Please see response to comment 1755-64. Also see Master Response 5 for a discussion of the governance structure proposed in the 2013 public draft BDCP. The role of the Permit Oversight Group is designed to be consistent with, or exceed, their regulatory authority under the ESA and NCCP Act. Note that the preferred alternative no longer includes BDCP or an HCP/NCCP (Alternative 4A). In the new regulatory structure, the fish and wildlife agencies have a stronger role in providing oversight in water operations than they did in an HCP/NCCP. Details of the roles of the SWP/CVP contractors in this process are being developed through the ESA Section 7 process and the state 2081(b) permit process.</p> <p>For information on compliance with the Endangered Species Act, please see Master Response 29.</p>
1755	72	To address high uncertainties about project performance and future conditions, instead of a 50-year permit, there should be renewable "no surprises" guarantees issued every ten years based on conditions at the time and prior performance.	Please see Response to Comment 1755-64.
1755	73	An adaptive management program needs to be developed that has the capacity and authority to conduct adaptive management experiments and effectively use outcomes to revise and improve future actions..	Please see Response to Comment 1755-61 and Response to Comment 1755-65.
1755	74	A well-funded BDCP science program needs to be developed that is integrated with existing Delta science programs. The best opportunity for integration lies with the current efforts to	Please see response to comment 1755-61 and response to comment 1755-65 discussing the Collaborative Science and Adaptive Management Program. Also see Master Response 8 regarding the project's

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		update the Delta Science Program.	independent utility.
1755	75	<p>Chapter 1: The Bay Delta Conservation Plan and Charge to the Panel</p> <p>Introduction:</p> <p>The Bay Delta Conservation Plan (BDCP) is being developed to meet Endangered Species Act permit requirements for operations of the Federal Central Valley Project (CVP) and the State Water Project (SWP) within the Sacramento-San Joaquin Delta. The Plan includes proposals for new points of diversion in the north Delta, new operations criteria, extensive floodplain and tidal marsh restoration, and new governance, oversight and adaptive management programs. The Plan applicants are seeking Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) permits that will guide water exports and habitat management for 50 years.</p> <p>The Bay Delta Conservation Plan is the most complex HCP/NCCP permit application ever attempted. Development of the Plan has been funded principally by state and federal water contractors and has been on-going for more than 5 years. In Spring 2013, select chapters of the Administrative Draft of BDCP were serially released for public review. [Footnote 1-1: This report assumes that the reader is familiar with the Sacramento-San Joaquin Delta and on-going efforts to manage water supply and ecosystems to meet the co-equal goals prescribed in the 2009 Delta Reform Act. A summary of conditions in the Delta and other issues can be found at: <a href="http://baydeltaconservationplan.com/Home.aspx">http://baydeltaconservationplan.com/Home.aspx</a>] An Administrative Draft of the EIS/EIR for the Plan was released in May of 2013. [Footnote 1-2: <a href="http://baydeltaconservationplan.com/Library/DocumentsLandingPage/EIREISDocuments.aspx">http://baydeltaconservationplan.com/Library/DocumentsLandingPage/EIREISDocuments.aspx</a>]</p> <p>At the request of The Nature Conservancy California and American Rivers -- two non-governmental organizations engaged in the BDCP process -- an independent panel of five experts (Text Box 1.1) was assembled to assist in technical review of BDCP documents. The panel was asked to answer a suite of questions about the Plan to help inform decision making by American Rivers and The Nature Conservancy. The panel was assembled and managed by Saracino &amp; Mount, LLC, under contract from the S.D. Bechtel, Jr. Foundation Water Program. NewFields, Inc. provided support for the panel, including data retrieval, analysis and presentation. This report summarizes the conclusions of the work of this panel.</p> <p>Guiding Questions:</p> <p>Two planning meetings were held between Saracino &amp; Mount, LLC and staff of American Rivers and The Nature Conservancy. An initial list of more than 40 questions were developed that were germane to decisions that the organizations needed to make about future engagement with BDCP. These questions were distilled into the following six:</p> <p>Q.1 Do operations of the dual facilities meet the broader goal of taking advantage of wet and above average years for exports while reducing pressure on below average, dry and critically dry years? What substantive changes in operations (and responses, see below) are there both seasonally and interannually?</p> <p>Q.2 Based on operations criteria, does the Plan properly identify ecological impacts likely to occur adjacent to and in the bypass reach downstream of the new North Delta diversion facilities? If there will be direct and indirect harm to listed species by the facilities, does the</p>	<p>The comment is providing a recount of the past review of the BDCP and meetings held on the BDCP. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>Plan prescribe sufficient mitigation measures?</p> <p>Q.3 Are changes in operations and points of diversion prescribed in the Plan sufficient to significantly improve in-Delta conditions for covered species? The focus is on listed species, including delta and longfin smelt, steelhead, winter and spring run Chinook, and green sturgeon.</p> <p>Q.4 Are covered pelagic fish like longfin smelt and delta smelt likely to benefit from restoration of floodplain and tidal marsh habitat at the scale proposed by the Plan? Given the current state of knowledge, and assuming that all Plan commitments are met, are these efforts likely to result in relaxed X2 and spring outflow standards?</p> <p>Q.5 Does the Plan provide achievable, clear and measureable goals and objectives, as well as governance that is transparent and resilient to political and special interest influence?</p> <p>Q.6 Is there a robust science and adaptive management plan for BDCP? As described, is the proposed "decision tree" likely to resolve major issues regarding Fall X2 and Spring Outflow prior to initial operations?</p> <p>Using these questions as guide, the panel reviewed selected chapters within the Plan. The focus of the review was on the biological goals and objectives for species of fish listed as threatened or endangered (BDCP Chapters 1, 2), the conservation measures proposed to meet the biological objectives (BDCP Chapter 3 and appendixes, see Text Box 1.2), and the analysis of the effects of the project on Delta fish species and communities (BDCP Chapter 5 and appendixes). The panel also examined governance, adaptive management and science programs proposed in the Plan, including the "decision tree" intended to resolve technical disagreements about initial operations (BDCP Chapters 3, 5, 6, 7, 8, 9, 10).</p> <p>In addition to reviewing BDCP documents and literature, the panel held two meetings with the consultants who prepared the Plan for the project applicants. The consultants answered questions about analyses contained within the Plan and provided or directed panel members to pertinent sources of modeling data.</p>	
1755	76	<p>[ATT 3: ATT1: Text Box 1.1: Members of the Review Panel.]</p>	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1755	77	<p>[ATT 3: ATT2: Text Box 1.2: Conservation Measures Considered by the Panel.]</p>	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1755	78	<p>The Bay Delta Conservation Plan seeks a permit for operation of the SWP and CVP at a future date when new facilities will be constructed. As written, the preferred alternative is to construct a new point of diversion in the North Delta on the Sacramento River near Freeport, with the goal of completion in 2025. This diversion is to have three screened intakes that will divert water into forebays and a pair of tunnels capable of transmitting a maximum of 9000 cfs [cubic feet per second] by gravity feed. These tunnels will link to existing SWP and CVP export facilities located in the South Delta. Permit authority for the construction and combined operations of these facilities -- typically referred to as dual facilities -- are the foundation of the plan. Construction and operations are paired with extensive conservation measures (see below) to mitigate for impacts of the project and to</p>	The comment provides a brief summary of the BDCP. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.

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		conserve and recover listed species and their biological communities.	
1755	79	<p>One of the many controversies surrounding the Plan is the establishment of an environmental baseline for comparison of alternatives and analysis of the effects of the project on listed species. The requirements of the Biological Opinions (BiOps) issued by the U.S. Fish and Wildlife Service (USFWS) in 2008 and the National Marine Fisheries Service (NMFS) in 2009 constitute the baseline for the Plan. There is considerable debate between the fish agencies (NMFS and USFWS principally) and the permittees over the provisions of these BiOps, particularly in regard to requirements for high Delta outflows to support longfin smelt in the spring and high outflows to achieve Fall X2 (low salinity zone) provisions to support delta smelt. For this reason, there are two Existing Biological Conditions (EBC) considered by the Plan (Table 1.1): EBC1 includes high spring outflow provisions and EBC2, includes both high spring outflow and the new Fall X2 provisions.</p> <p>A central requirement of the Plan, and the source of much of its complexity, is to analyze conditions over the 50-year life of the project. The Plan divides future conditions into two classes: Early Long Term (ELT), which captures the initial operating conditions of the project once a new diversion facility has been constructed (approximately 2025), and Late Long Term (LLT) which accounts for full completion of all conservation measures, including restoration of more than 55,000 acres of tidal marsh and floodplain (approximately 2060). Climate change, particularly changes in runoff and sea level, and changes in water demand are incorporated in these projections.</p> <p>The controversy over spring and fall outflow needs for conservation and recovery of listed species propagates into the assessments of future conditions. Without-project EBC1 and EBC2 are considered for both ELT and LLT. Evaluated starting operations (ESO) of the preferred project and alternatives are presented for ELT and LLT conditions. Two additional future scenarios are evaluated that purport to provide bookends to project operations that dictate future water exports. The first is a High Outflow Scenario (HOS), which is similar to the outflow standards in EBC2 (high spring and fall outflow). The second is a Low Outflow Scenario (LOS), which has reduced outflow standards for both spring and fall. Both the LOS and HOS are considered in the ELT and LLT, with the latter including completion of habitat restoration. The Plan proposes a "decision tree process" be undertaken during construction of the facility that will reduce uncertainties and guide initial project operations, presumably within the bounds of the HOS and LOS (reviewed in Chapter 9).</p> <p>For the purposes of this review, we simplified our comparison of operations and restoration scenarios to just three. Using simulation data provided by BDCP consultants, we examined the HOS and LOS scenarios for ELT. We then used a no-project alternative, No Action Alternative ELT, that commonly appears throughout BDCP documentation, particularly in the EIR/EIS. NAA prescribes a high fall outflow to maintain X2 standards for smelt and D-1641 salinity and flow standards required by the State Water Resources Control Board for the remainder of the year.</p> <p>It should be noted that the Panel chose not to review LLT scenarios and conditions beyond the question of whether restoration of marsh is likely to benefit listed fishes.</p> <p>Although it is necessary and useful to consider how the project might operate over the long-term, especially under climate change, the Panel felt that exceptionally high uncertainties made it difficult to offer precise answers within the LLT framework. These uncertainties are associated with our understanding of the Delta, with the models used to simulate future conditions, and with the array of events (biological invasions, floods,</p>	<p>The comment is related to analysis which includes both the ELT and the LLT time periods for the evaluation of absolute future conditions. The EIR/EIS impact assessment is based upon a comparison of conditions under Alternatives 1 through 9 and the Existing Conditions and the No Action Alternative. It is acknowledged in Chapter 5, Water Supply, and Appendix 5A, Modeling Technical Appendix, in the Draft EIR/EIS that specific projections of climate change conditions are difficult. Therefore, during the preparation of the Draft EIR/EIS, a sensitivity analysis was completed, as presented in Appendix 5A, Section D.3, Climate Change Modeling, to simulate conditions under the No Action Alternative and Alternative 1 under the five climate change scenarios. The operations results from these simulations were analyzed to understand the range of uncertainty in the incremental changes that would occur with a range of climate change scenarios. The sensitivity analysis indicated that Alternative 1 results would change with climate change scenarios; however, the incremental differences between the No Action Alternative under a specific climate change scenario and Alternative 1 under the same specific climate change scenario were consistent. Because the EIR/EIS only evaluates the incremental differences, and not absolute values, between the Existing Conditions and the No Action Alternative and Alternatives 1 through 9, the incremental changes appear to be similar under a range of climate change scenarios.</p> <p>For more information on environmental baselines, please see Master Response 1.</p>

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		droughts, earthquakes, policy changes, lawsuits, etc.) that are likely to occur.	
1755	80	[ATT 3: ATT3: Table 1.1. Definitions of existing baseline conditions and project conditions simulated in BDCP.]	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS. Please see response to comment 1755-79 regarding comment related to this attachment.
1755	81	<p>A Note About Hydrologic Modeling Tools and Uncertainties:</p> <p>The basis for the BDCP analysis is hydrologic simulation modeling that provides flow, water elevations, temperature and salinity at various locations throughout the Delta and its upstream areas. Much of the Effects Analysis for aquatic species and all of the export projections are based on outputs from these hydrologic models. BDCP is one of the most complex modeling efforts of its kind and certainly the most complex ever attempted in the Delta. This is a heroic modeling effort.</p> <p>There are three general categories of uncertainty in the hydrologic model results:</p> <ul style="list-style-type: none"> <li>- Model uncertainties. This includes how the model simulates hydrology and the hydrologic results of operations, including salinity, temperatures and other water quality parameters. The currently available modeling tools are less than ideal to simulate such a long-term record with dramatic changes in conditions such as sea level rise and introduced sub-tidal and inter-tidal land. The principal issues are summarized in Text Box 1.3.</li> <li>- Future condition uncertainties. There is extensive effort in BDCP to estimate future conditions in the Delta, including sea level rise and changes in temperature and runoff. This is the most comprehensive approach to date. These are described well in Appendix 5A of the Plan and highlight high levels of uncertainty.</li> <li>- Regulatory and behavioral uncertainty. BDCP models assume that flow and water quality standards will remain static during the life of the project. In addition, the models assume uniform behavior of system operators, ignoring real-time operations and adaptations. All of these are highly unlikely to occur.</li> </ul> <p>The hydrologic model results of BDCP are presented as if they are a unique solution. Given the compounding uncertainties, BDCP model results should be considered as scenarios rather than specific outcomes. This issue is often lost in the public debates over BDCP. As discussed later in this report, the model uncertainties significantly impact our confidence in some of our results, particularly our analysis of the response of pelagic fishes to changes in South Delta operations.</p>	<p>As described in Appendix 5A of the Final EIR/EIS, these models cannot be used in a predictive manner to define absolute values. Rather, they must be used in a comparative manner to indicate basic changes between alternatives or scenarios and understand the sensitivity of changes that could occur from the Existing Conditions and the No Action Alternative.</p> <p>For more information on modeling, please see Master Response 30. Also see Master Response 28, Operational Criteria, for a discussion of operations modeling versus Actual Operations.</p>
1755	82	<p>[ATT 3: ATT4: Text Box 1.3: Hydrologic Model Uncertainty.</p> <p>To adapt existing tools to model future conditions under BDCP consultants developed dispersion coefficients with the 3-dimensional UnTRIM model developed by Michael MacWilliams for sea level rise. A similar process was then followed with a 2-dimensional model developed by Research Management Associates to estimate the additional dispersion for the proposed new open tidal areas. Parameters developed from the multi-dimensional efforts were then incorporated into the 1-dimensional DSM2 planning model developed by DWR to simulate a part of the long-term record incorporating sea level rise and tidally</p>	Please see response to Comment 1755-81.

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		<p>restored acreage. The boundary conditions for the DSM2 model, which operates at time steps as short as 15 minutes, was provided by CALSIM, the 1-dimensional system-wide water operations optimization model. CALSIM output occurs on monthly time steps and had to be disaggregated to provide boundary conditions for DSM2. All the results, including the DSM2 results and artificial neural network salinity results, were then used to train the CALSIM model. The CALSIM model was then used to simulate the entire 82-year record that formed the basis for the Effects Analysis. All of these model exchanges, particularly between 1-, 2- and 3-dimensional models, create error or model bias. To date, there is no assessment of these model biases and how they impact BDCP results.</p>	
1755	83	<p>Chapter 2: An Overview of the Law Governing the BDCP</p> <p>Introduction:</p> <p>This chapter provides a brief overview of the law that governs the creation and implementation of the Bay Delta Conservation Plan. It also addresses an important question that has arisen during the BDCP negotiations: May the Director of the California Department of Fish and Wildlife (CDFW) approve the BDCP as a natural community conservation plan if the BDCP does not provide for full recovery of the endangered and threatened species covered by the Plan?</p> <p>Habitat Conservation Planning and Natural Community Conservation Planning Under Federal and California Law:</p> <p>The BDCP is a Habitat Conservation Plan (HCP) authorized by section 10(a) of the federal Endangered Species Act (ESA), 16 U.S.C. [Section] 1539(a), and a Natural Community Conservation Plan (NCCP) authorized by the California Natural Community Conservation Planning Act (NCCPA), California Fish and Game Code [Sections] 2800-2835. Section 10(a) of the federal ESA allows the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to issue permits that authorize the taking of endangered or threatened species "if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" and the proposed activity is governed by an approved HCP. Id. [Section] 1539(a)(1)(B) &amp; (2). Similarly, under the NCCPA the California Department of Fish and Wildlife (CDFW) may "authorize by permit the taking of any covered species . . . whose conservation and management is provided for in a natural community conservation plan approved by the department." California Fish &amp; Game Code [Section] 2835. [Footnote 2-1: The NCCPA defines "covered species" to include species that are listed for protection under the California Endangered Species Act, California Fish &amp; Game Code [Sections] 2050-2115.5, and nonlisted species that are "conserved and managed under [another] approved natural community conservation plan and that may be authorized for take." Id. [Section] 2805(e).]</p> <p>If approved by the three fish and wildlife agencies, the BDCP will be a legally binding document that defines the terms and conditions under which the U.S. Bureau of Reclamation (USBR) and the California Department of Water Resources (DWR) may construct and operate the proposed new water diversion and transport facilities described in the draft Plan. [Footnote 2-2: The statutory requirements for the contents and approval of the BDCP as an HCP and NCCP are set forth respectively in section 10(a)(2)(A) &amp; (B) of the federal Endangered Species Act, 16 U.S.C. [Section] 1539(a)(2)(A) &amp; (B), and sections 2810 and 2820 of the California Fish and Game Code.] The BDCP also will serve as "a comprehensive conservation strategy for the Sacramento-San Joaquin River Delta (Delta) designed to restore and protect ecosystem health, water supply, and water quality within a</p>	<p>Under the federal Endangered Species Act (ESA), an applicant for a Section 10 permit must submit a conservation plan that species, among other things, the steps that will be taken to minimize and mitigate the impact of covered activities on the species covered by the plan. Under the State Natural Community Conservation Planning Act (NCCPA), a conservation plan is required to include measures that collectively provide for the conservation and management of species covered by the plan.</p> <p>Specifically, under Section 10(a)(1)(B) of the ESA, USFWS and NMFS may permit the incidental take of listed species that may occur as a result of an otherwise lawful activity. To obtain a Section 10(a)(1)(B) permit, an applicant must prepare a Habitat Conservation Plan (HCP) that meets the following five criteria.</p> <ol style="list-style-type: none"> <li>1) The taking will be incidental to an otherwise lawful activity.</li> <li>2) The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.</li> <li>3) The applicant will ensure that adequate funding for the Plan will be provided.</li> <li>4) The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.</li> <li>5) Other measures, if any, which USFWS and NMFS require as being necessary or appropriate for purposes of the Plan will be met (16 USC 1539(a)(2)(A)).</li> </ol> <p>Under the BDCP, Conservation Measures are defined as those actions that will minimize and mitigate, to the maximum extent practicable, impacts to Covered Species associated with Covered Activities, as well as those actions that contribute to the recovery of those species. Collectively, the BDCP Conservation Measures have been designed to meet the permit issuance requirements of the ESA and the NCCPA.</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.</p> <p>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>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</p>

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		stable regulatory framework" (BDCP 1-1).	<p>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>A biological opinion is not required prior to the release of the Draft BDCP/CWF EIR/EIS. For the Proposed Action, the USFWS and NMFS will conduct an internal ESA section 7 consultation prior to issuance of an Section 10(a)(1)(B) permit for the Proposed Action. These federal agencies will coordinate the ESA consultation process and other environmental review processes, such as the National Environmental Policy Act (NEPA), consistent with federal regulations. In addition, the USFWS and NMFS will consult with the United States Bureau of Reclamation (Reclamation) to complete biological opinions or a joint biological opinion prior to federal action to carry out the proposed project.</p> <p>For information on compliance with the Endangered Species Act, please see Master Response 29. For information on project permitting, please see Master Response 45.</p>
1755	84	<p>The BDCP will include "regulatory assurances" that protect the permittees from the financial cost of changes to the BDCP or other regulatory changes needed to protect the species or their habitat. As authorized by federal and state law, these regulatory assurances provide that, if changed circumstances arise that are either unforeseen or not provided for in the Plan, then the fish and wildlife agencies will not require the permittees to devote additional land, water, or financial resources beyond the levels set forth in the BDCP without the consent of the plan participants. Nor will the federal and state regulators impose additional restrictions on project operations without compensating the permittees for the lost water or additional costs. [Footnote 2-3: The USFWS and NMFS adopted the federal "no surprises" policy by rulemaking in 1998. The substantive requirements of these rules may be found at 50 C.F.R. [Section] 17.22(b)(5) &amp; (6) and 50 C.F.R. [Section] 222.307(g), respectively. The state "no surprises" guarantees are set forth in the NCCPA itself. California Fish &amp; Game Code [Section] 2820(f).]</p> <p>Both statutes also authorize the fish and wildlife agencies to suspend or revoke the incidental take permits for noncompliance with the terms and conditions of the BDCP or where implementation of the Plan will place the covered species in jeopardy of extinction. [Footnote 2-4: The federal suspension and revocation rules are set forth in the Endangered Species Act, 16 U.S.C. [Section] 1539(a)(2)(C), and in the ESA regulations, 50 C.F.R. [Section] 17.22(b)(8). The state law counterparts may be found in California Fish &amp; Game Code [Section] 2820(b)(3).]</p> <p>We consider the regulatory assurances, revocation authority, and other aspects of BDCP governance in Chapter 8.</p>	<p>The comment is noted regarding the proposed regulatory assurances described in the BDCP. Please also see response to comment 1755-64.</p>
1755	85	<p>Conservation and Recovery Requirements Under Federal and State Law:</p> <p>The federal Endangered Species Act and the California Natural Communities Conservation Planning Act differ in their respective conservation and recovery standards. The federal statute provides that the fish and wildlife agencies may not approve the BDCP unless they determine that the incidental take authorized by the permit and Habitat Conservation Plan "will not appreciably reduce the likelihood of the survival and recovery of the species in the wild." 16 U.S.C. [Section] 1539(a)(2)(B)(iv).</p> <p>In contrast, the California Natural Community Conservation Planning Act states that Department of Fish and Wildlife may approve the BDCP only if it finds inter alia that the Plan "provides for the protection of habitat, natural communities, and species diversity on a</p>	<p>Please see Response to Comment 1755-83.</p>

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		<p>landscape or ecosystem level through the creation and long-term management of habitat reserves or other measures that provide equivalent conservation of covered species appropriate for land, aquatic, and marine habitats within the plan area." [California Fish &amp; Game Code [Section] 2820(a)(3) (emphasis added).] The Act defines "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] are not necessary." Id. [Section] 2805(d) (emphasis added).</p> <p>In other words, the federal Endangered Species Act requires only that habitat conservation plans ensure that the permitted activities do no significant harm to the listed species or to their critical habitats. The California Natural Communities Conservation Planning Act, by comparison, regards proposed projects such as the BDCP as opportunities for more coordinated and cohesive planning to improve the condition of covered species and their habitat, rather than simply being a means to authorize the permitted activities while maintaining the status quo ante.</p> <p>The draft BDCP describes its biological goals and objectives in two different ways. At the "landscape level," the goals include restoration or creation of "ecological processes and conditions that sustain and reestablish natural communities and native species" (BDCP 3.3-5). At the "species level," however, the biological goals refer to progress toward the landscape level goal of reestablished and sustainable natural communities and native species.</p>	
1755	86	<p>The primary biological goals for the delta smelt and longfin smelt are "increased end of year fecundity and improved survival of adult and juvenile . . . smelt to support increase abundance and long-term population viability" (BDCP 3.3-13 &amp; 3.3-16). Similarly, the principal biological goal for Sacramento Winter-Run Chinook Salmon is "improved survival (to contribute to increased abundance) of immigrating and emigrating . . . salmon through the Plan Area," (BDCP 3.3-16), and for other species of salmon and steelhead the goal is "increased . . . abundance" (BDCP 3.3-17 to 3.3-19).</p> <p>The draft BDCP explains that the process of developing these species level biological goals "did not assume that the BDCP would be solely responsible for recovery of these species, and so the designated biological goals and objectives did not necessarily match the recovery goals, but instead represented the BDCP's potential to contribute to recovery within the Plan Area (BDCP 3.A-14: emphasis added). This decision has become a focal point of debate over the essential purposes and mandates of the NCCPA.</p> <p>In a July 10, 2013, letter to the Director of California Department of Fish and Wildlife, three environmental organizations challenged the BDCP's proposed adoption of biological goals that do not provide for full recovery of the species, arguing that this "contribution to recovery" standard violates California law"</p> <p>"Under the plain text of the NCCPA, conservation means recovery, and a Plan is required to contain measures that are sufficient to achieve recovery within the plan area."</p> <p>[The Natural Community Conservation Planning Act is the Foundation for a Successful Bay Delta Conservation Plan, Letter to Charlton H. Bonham, Director of the California Department of Fish and Wildlife, from the Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute, July 10, 2013, at 5 (citing Fish &amp; Game Code [Section] 2805(c)).]</p>	<p>While the delta smelt life cycle is carried out entirely within the Plan Area, there are factors and stressors within the Plan Area that BDCP may not address. However, as our understanding of delta smelt increases, BDCP has flexibility through monitoring and adaptive management to respond to this increase in our understanding for the benefit of covered species and ensure progress toward recovery is being achieved.</p> <p>Additionally, the range of most of the covered species extends well beyond the boundary of the Plan Area, making it impossible for BDCP, in-and-of itself, to provide for the full recovery of each of the covered species. External factors, occurring outside the Plan Area boundaries are beyond what BDCP can affect, making it impossible for BDCP to do more than to provide a meaningful contribution to recovery.</p> <p>Again, please note that preferred alternative is now Alternative 4A, which no longer includes habitat restoration beyond what is required to mitigate effects of constructing and operating the project. Alternative 4A would not serve as habitat conservation plans/natural community conservation plans (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). For information on compliance with the Endangered Species Act, please see Master Response 29.</p>

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1755	87	<p>The limitations on project operations and other conservation measures set forth in the draft BDCP would not meet the conservation standard proposed by the July 10th letter -- viz. full recovery of the listed species -- though they are likely to contribute to species recovery. The letter thus raises a critical legal question that will have to be resolved by the Director of California Department of Fish and Wildlife [(CDFW)], in consultation with the Department's General Counsel and the Attorney General, before the Department decides whether to approve the BDCP.</p> <p>The answer to this question is not free from doubt, as the Legislature defined the purposes of the NCCPA [Natural Community Conservation Planning Act] in terms that stand in some tension to one another. For example, section 2801(i) declares that the "purpose of natural community conservation planning is to sustain and restore those species and their habitat . . . that are necessary to maintain the continued viability of those biological communities impacted by human changes to the landscape." California Fish and Game Code [Section] 2801(i) (emphasis added). In contrast, section 2801(g) states that "[n]atural community conservation planning is a mechanism that can provide an early planning framework for proposed development projects . . . in order to avoid, minimize, and compensate for project impacts to wildlife." Id. [Section] 2801(g).</p> <p>A careful and integrated reading of the text of the substantive provisions of the statute, however, should lead to the conclusion that the Act authorizes the CDFW to approve the BDCP if it concludes that the Plan would protect listed species from the adverse effects of the projects authorized by the Plan (including full mitigation of those effects) and would promote the recovery of listed species. Stated differently, we do not believe that the Legislature intended to prohibit the Department from approving the BDCP unless it concludes that the Plan--in isolation both from other existing sources of the species' decline and from other state and federal actions to protect listed species--will achieve full recovery of the species.</p>	<p>The commenter offer's their opinion on statements made in a July 10, 2013 letter to Charlton H. Bonham, Director of the California Department of Fish and Wildlife from the Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>
1755	88	<p>The interpretation of the statute proposed in the July 10th letter is based entirely on the section of the Act that defines the term "conservation." If the Legislature actually intended to require the California Department of Fish and Wildlife to determine that an NCCP would be likely to achieve full recovery of listed species, it would have included this requirement in Section 2820, which governs the Department's approval of proposed NCCPs.</p> <p>Section 2820(a) lists ten separate findings that are prerequisite to CDFW approval, and section 2820(b) contains nine terms that must be included in the implementation agreements that accompany the NCCPs. None of these mandatory findings and terms includes the requirement proposed in the July 10th letter. We do not believe that the Legislature somehow intended to add a twentieth requirement to these lists -- that the NCCP and implementation plan must provide for full species recovery -- by implication from the definitions section of the Act.</p>	<p>The commenter offer's their opinion on statements made in a July 10, 2013 letter to Charlton H. Bonham, Director of the California Department of Fish and Wildlife from the Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>
1755	89	<p>There are two provisions in section 2820 that expressly link the required conservation measures to the effects of the project authorized by an NCCP [Natural Community Conservation Plan]. Section 2820(a) states that the California Department of Fish and Wildlife may approve an NCCP only if it finds that the plan "contains specific conservation measures that meet the biological needs of covered species and that are based upon the best available scientific information regarding the status of covered species and the impacts of permitted activities on those species." [Id. Section 2820(a)(6)]</p>	<p>The commenter offer's their opinion on statements made in a July 10, 2013 letter to Charlton H. Bonham, Director of the California Department of Fish and Wildlife from the Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>Section 2820(b) stipulates that implementation agreements must include provisions "to ensure that implementation of mitigation and conservation measures on a plan basis is roughly proportional in time and extent to the impact on habitat or covered species authorized under the plan. These provisions shall identify the conservation measures . . . that will be maintained or carried out in rough proportion to the impact on habitat or covered species." [Id. Section 2820(b)(9)]</p> <p>This pairing of conservation and recovery with references to the "impacts of permitted activities," together with the "rough proportionality" limitation on conservation measures, suggests that the Legislature intended to authorize NCCPs as a means of contributing to other state and federal efforts to recover species, but not significantly in excess of the burdens that the project covered by the plan would impose on the species. [Footnote 2-5: The July 10th letter acknowledges that the NCCPA [Natural Community Conservation Planning Act] contains this "rough proportionality" limitation, but argues that "the concept of 'rough proportionality' is applied only to mitigation measures and not to a plan's conservation measures." Letter to Director Bonham at 7. The text of the Act belies this interpretation, however, as four of the five statutory references expressly apply the "rough proportionality" limitation to the conservation requirements. See California Fish &amp; Game Code Sections 2805(g)(3)©, 2820(b)(3)(B), Section 2820(b)(9) &amp; Section 2820©.]</p>	
1755	90	<p>There is nothing in the text or legislative history of the NCCPA to indicate that the Legislature intended to force the state to bear programmatic and financial responsibility for full species recovery each time the CDFW approves an NCCP. [Footnote 2-6: The July 10th letter recognizes that the entities that receive incidental take permits under the BDCP may not be required to bear all of the costs of recovery of the various listed species: "[W]hen dividing up the costs of the plan's conservation strategy, the individual developers are only responsible for paying for 'mitigation' and the 'conservation' increment above mitigation is the responsibility of the state." Letter to Director Bonham at 7. Thus, if the costs of recovery exceed the mitigation costs that lawfully may be assigned to the permitted entities, the state must make up the difference: "The BDCP cannot limit its conservation measures to address only those impacts from the covered activities and avoid providing conservation measures sufficient to recover covered species." Id. at 8.] Conservation measures required to achieve full recovery may extend far beyond the scope of an individual NCCP. Indeed, a requirement of full recovery would be particularly problematic for plans such as the BDCP that involve multiple species (some of which only partly inhabit the program area), multiple sources of stress, and diverse land and water management and regulatory agencies that each have independent obligations to contribute to species conservation and recovery. We do not believe that the Legislature would have assigned such a Herculean obligation to the Department, or imposed such a potentially large financial burden on state taxpayers, without saying so explicitly in the text of the statute.</p> <p>An interpretation of the statute that would require the CDFW to make a determination that all proposed NCCPs provide for full recovery of listed species would likely have the unintended and pernicious consequence of deterring the Department from approving future plans. The CDFW might conclude that the scope of the necessary species recovery effort extends beyond the scope of the proposed project and hence beyond the capabilities of the project restrictions and conservation measures that would be included in the individual NCCP. Or it might be reluctant to approve an NCCP in situations where the costs of full recovery of the listed species covered by the plan -- which the state would have to bear -- significantly exceed the project mitigation costs that may be placed on the project</p>	<p>The commenter offer's their opinion on statements made in a July 10, 2013 letter to Charlton H. Bonham, Director of the California Department of Fish and Wildlife from the Defenders of Wildlife, Natural Resources Defense Council, and the Bay Institute. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>proponents.</p> <p>These factors are especially pronounced in contexts such as the Delta ecosystem where there are multiple species (some of whose habitat is only partly within the project area), multiple stressors (many of which are not plan participants), overlapping and sometimes conflicting habitat requirements, and tremendous uncertainty both about the needs of the species and the likelihood of success of recovery strategies. The interpretation of the NCCPA set forth in the July 10th letter therefore poses a significant policy risk of deterring otherwise salutary applications of natural resources conservation planning.</p>	
1755	91	<p>Chapter 3: Water Supply Operations</p> <p>Introduction:</p> <p>The construction of a new North Delta diversion facility, and the coordinated operation of the North and South Delta facilities constitute the first and most prominent conservation measure (CM#1) of the BDCP. While ostensibly a conservation measure, the new facilities are principally an effort to improve the reliability of exports from the Delta. Their operations, in conjunction with all other conservation measures, are intended to mitigate for impacts of the CVP and SWP, avoid jeopardy and/or to contribute to the recovery of covered species (Chapter 2).</p> <p>A basic premise of BDCP is that the construction of the new North Delta diversion facility will simultaneously improve water supply reliability while reducing ecosystem impacts. This stems from the increased operational flexibility associated with two points of diversion located in different portions of the Delta. A presumed benefit of this flexibility is the capacity to take advantage of periods of high inflow for exports, allowing for reductions in exports during dry periods when impacts on the ecosystem may be largest. This is consistent with the co-equal goals expressed in the 2009 Delta Reform Act.</p> <p>This chapter examines the water supply operations proposed under BDCP to evaluate 1) if there are significant changes in supply reliability associated with the project and 2) how these changes apportion exports in wet vs. dry periods. This description is foundational for the assessment of ecological and species-specific consequences of BDCP as described in subsequent chapters.</p> <p>Proposed Facilities and Operations:</p> <p>There are lengthy descriptions of the design and operation of new and existing water export facilities in the Administrative Drafts of the EIR/EIS and BDCP. The reader is referred to these documents for information. The centerpiece of the plan is the 9000 cfs capacity diversion in the North Delta that conveys water to the SWP and CVP export facilities in the South Delta through two tunnels.</p> <p>Regulatory Constraints:</p> <p>The operational criteria for the export facilities are both complex and highly constrained (Appendix A).</p>	<p>For information on the project's purpose and need please see Master Response 3. For a discussion of operational criteria please see Master Response 28. With regards to the Delta Reform Act, please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS.</p>
1755	92	<p>State Water Resources Control Board water rights decision D-1641: this includes standards for minimum monthly Delta outflow, salinity objectives at multiple Delta locations, location of X2 (the position of the 2 ppt salinity near the channel bottom), a maximum export/import</p>	<p>The proposed intakes would only be permitted to operate with regulatory protections, including river water levels and flow, which would be determined based upon how much water is actually available in the system, the presence of threatened fish species, and water quality standards. Flow criteria will be applied</p>

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		ratio objective [Footnote 3-1: BDCP treats the export/import ratio in two ways: 1) counting as "import" all inflows from the San Joaquin and Sacramento Rivers and Delta's tributaries or 2) counting inflows as above, but counting flows below the North Delta facility as inflow. The latter approach seeks to exclude North Delta exports from D-1641 export/import restrictions. From an ecosystem perspective, this makes no sense since the North Delta exports are, in effect, exports from the legal Delta.], closures of the Delta Cross Channel (DCC), placement of a barrier at the head of Old and River, and flow standards for the San Joaquin River below Vernalis. These standards vary depending upon months of the year and water year type.	month by month and according to water year type. Monitoring for compliance with D-1641 requirements or any future requirements for SWP/CVP water supply operations would be conducted year-round in the future under the proposed project. For more information on the projects effects on water quality see Chapter 8 of the Final EIR/EIS and Master Response 14. For a discussion on water rights, please see Master Response 32.
1755	93	Remanded 2008 U.S. Fish and Wildlife Service Biological Opinion (BiOp): prescribes restrictions for magnitude and timing of reverse flows in Old and Middle Rivers (OMR) in the South Delta, to protect delta smelt. These vary depending upon time of year, water temperature, flows on the San Joaquin River, and proximity of smelt. This BiOp also calls for higher spring and fall outflows that exceed D-1641 standards. These outflow standards vary on water year type.	This is generally an accurate characterization, although only increased fall outflow is explicitly included as a management action under the BiOp, with a resultant change in the position of the low-salinity zone (indexed by X2, for which there are requirements in wet and above normal years); higher spring outflow results from restrictions in south Delta export pumping, intended to limit entrainment of the early life stages of delta smelt, and there is not an explicit target for outflow or X2 in the spring from the BiOp.
1755	94	Remanded 2009 NMFS (National Marine Fisheries Service) BiOp (Biological Opinion): has different restrictions on OMR (Old and Middle River) flows than the U.S. Fish and Wildlife Service BiOp. Reductions in reverse OMR flows are scheduled to protect outmigrating salmonids. These vary depending on temperature and inflow. This BiOp increased San Joaquin River flows and set export/San Joaquin River flow ratios that are more restrictive than D-1641.	See response to comment 1755-93.
1755	95	<p>There are other regulatory constraints beyond D-1641 and the two remanded BiOps; however, compliance with these regulations appears to dominate water supply export modeling. Additional constraints are based on proposed operating rules for both the North and South Delta facilities. The most significant include:</p> <ul style="list-style-type: none"> <li>* Maintenance of minimum flows downstream of the North Delta facility (called "Bypass Flows")</li> <li>* Restrictions aimed to reduce reverse flows at the confluence between the Sacramento River and Georgiana Slough</li> <li>* A tiered, three-level pumping regime for December through June that seeks to protect the initial winter flood pulse and spring pulses that affect juvenile salmon outmigration</li> <li>* Flows with sufficient velocity to reduce impingement of salmonids at diversion screens</li> <li>* Increased restrictions for reverse Old and Middle River (OMR) flows associated with South Delta exports.</li> </ul>	For information on operational criteria please see Master Response 28.
1755	96	<p>Infrastructure design and capacity forms another array of constraints. For the purposes of BDCP simulation modeling, south of Delta storage was limited to space within San Luis Reservoir. Operations during wet and above average conditions are often constrained by available space to store water in this facility. Expanding potential storage, particularly groundwater storage, would have created considerably more flexibility in exports, particularly during wet years.</p> <p>The size of the North Delta facility is also a constraint, principally during periods of sustained high flow on the Sacramento River in wet years. The preferred project has shifted from an</p>	<p>Please see Master Response 37 regarding why an alternative focused on creating additional storage, either in the Delta or elsewhere, was not included in the project or EIR/EIS.</p> <p>Please see Master Response 4 regarding the development of alternatives.</p>

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		<p>initial facility size of 15,000 cfs [cubic feet per second] to 9,000 cfs in the current plan. The export, economic and environmental performance of the 9,000 cfs facility is compared to 14 alternatives in Chapter 3 and 5 of the Draft EIS/EIR. These alternatives vary facility size, location and operations in the comparison. A narrative is presented in the EIS/EIR that describes the rationale for rejecting the 14 alternatives and selecting the preferred project. [Footnote 3-2: It is beyond the scope of this review to examine facility size in detail. In general, the analyses offered in the EIR/EIS conclude that the 9,000 cfs facility provides the optimal balance of cost and flexibility. The additional capacity of the 15,000 cfs facility is rarely used in the operations that they modeled, leading to a very modest increase (&lt;250 taf [thousand acre-feet]) in overall exports. The EIS/EIR did examine smaller facilities with capacities of 6,000 cfs and 3,000 cfs. However, the operating criteria used to evaluate these two alternatives are not comparable to those of the preferred alternative, making the comparison moot.]</p>	
1755	97	<p>Exports are also naturally constrained by the timing and volume of inflows, with strong seasonal and interannual variation. One of the larger export challenges faced by BDCP is its location at the bottom of the system where flows enter the Delta. Upstream water management and consumptive use dominate inflows to the Delta over most years (Figure 3.1). These abstractions, which consume roughly ¼ of water that would naturally flow to the Delta, are beyond the control of BDCP, yet are the greatest operational influence on Delta inflows. Under BDCP, exports would be roughly equivalent to upstream consumptive use.</p> <p>In addition, there are important restrictions on reservoir operations that constrain exports. The U.S. Army Corps of Engineers has congressionally authorized rule curves that dictate Fall, Winter and Spring operations to maintain flood reserves. More importantly, there are BiOps that dictate flow and temperature requirements to meet the life history needs of covered salmon, steelhead and sturgeon below the dams. Meeting these standards, particularly in drier years and under a warming climate, limits the amount and timing of inflows to the Delta. Oroville Reservoir, which has fewer restrictions on flows, becomes the most important for supporting Delta inflows as a result, particularly during drought conditions.</p> <p>Consequences of Constraints:</p> <p>The above discussion is intended to highlight a conundrum that is not discussed much outside of the BDCP community of experts and is not examined in the Plan: export operations and operations to support conservation are highly constrained.</p>	<p>Please see Master Response 25, which addresses upstream reservoir operations and Master Response 28, which addresses operational criteria.</p>
1755	98	<p>These regulatory, operational and infrastructure constraints limit the ability of BDCP to adaptively manage operations to support co-equal export and ecosystem objectives. For this reason, the anticipated management associated with the new diversion facility is not fully realized.</p> <p>This also highlights how flow management in BDCP was developed using system models. As described in Appendix 5C of the Plan, the models sought to meet the requirements of D-1641, the remanded BiOps, reservoir and diversion facility constraints, and south of Delta storage. The objective function was then to maximize Delta exports within those constraints. Although this seems logical, it highlights how CM1 is not a conservation measure, per se. Rather than doing a bottom-up assessment of ecosystem flow needs, as is typically done when setting environmental flows, the modeling sought to meet current regulatory requirements and flow constraints sought by fish agencies. This illustrates one of</p>	<p>The EIR/EIS alternatives were developed in accordance with the Project Objectives and Purpose and Need statement (see Chapter 2 of the Final EIR/EIS).</p> <p>For more information regarding operational criteria see Master Response 28 and for information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p> <p>For a discussion on conservation measures, please see Master Response 22 on mitigation.</p>

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		the key points made by Lund et al. (2010) and Moyle et al. (2012) that multi-objective management of the Delta is likely to require a comprehensive re-evaluation of flow and water quality standards.	
1755	99	[ATT 3: ATTS:  Figure 3.1 Graph of proportional Delta water use. Exports constitute roughly 18% of the total unimpaired flow of the Delta in the 1986-2005 hydrology, with upstream consumptive use approximately 24%. From Fleenor et al. (2010).]	Please see response to comment 1755-98 and response to comment 1755-99 regarding comments related to this attachment.
1755	100	Export Reliability:  A goal of the BDCP project and the current Delta Plan is to improve reliability of water derived from the Delta for consumptive uses. [Footnote 3-3: In actuality, the most reliable system would provide a given amount of water each year with the smallest deviation from that amount. Instead, BDCP attempts to produce the most water in any given year under the given regulatory and operational constraints. This produces a more resilient water supply systems, whereby the greatest volume is made available, even under the event of catastrophic salinity intrusion into the Delta. The terms resilient and reliable are used interchangeably in BDCP and other documents.] Using model simulations provided by BDCP consultants, we have evaluated how well BDCP meets the goal of improving export reliability. The most commonly discussed aspect of BDCP -- average annual export -- is summarized in Figure 3.2, and compares the no-project alternative (NAA) with the high outflow scenario (HOS) and low outflow scenario (LOS) (defined in Chapter 1). This modeling suggests that the HOS and NAA would provide roughly equal average exports, with the LOS providing approximately 700 thousand acre-feet more. However, these figures are an average over an 82-year simulation period and offer little information about reliability.  Exceedance curves (Figure 3.3) give a better indication of reliability. This approach provides the probability that a given export volume will be equaled or exceeded in any given year. For example, for the 50% exceedance probability (meaning one out of every two years), the NAA performs slightly better than the HOS, but much worse than the LOS. Overall, the LOS performs significantly better than NAA in six out of ten years and better than the HOS in eight out of ten. The HOS is outperformed by the NAA in five out of ten years (drier) and appears to only provide significant water supply benefits over the NAA in one out of ten years (wettest). The conclusion is that export reliability for the HOS and NAA are not substantially different, while reliability for the LOS is markedly higher.  Water supply reliability curves for SWP and CVP customers are presented in Chapter 5 of the Draft EIS/EIR. These curves indicate that south-of-Delta municipal and farm users would realize considerable increases in overall reliability of supply under the LOS, compared to the NAA and HOS, particularly in above average and wet years. North-of-Delta users of CVP water would likely see a decrease in reliability over the long term, principally due to climate change.	For information on modeling, please see Master Response 30.  Regarding operational criteria see Master Response 28 and for information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.
1755	101	[ATT 3: ATT6:  Figure 3.2: Graphs of monthly averaged exports for No Action Alternative (NAA), low outflow scenario (LOS) and high outflow scenario (HOS) under early long term (ELT) conditions. Based on BDCP CALSIM data.]	Please see response to comment 1755-100 regarding comment related to this attachment

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1755	102	<p>[ATT 3: ATT7:</p> <p>Figure 3.3: Graph of exceedance probabilities for NAA, LOS and HOS exports under ELT conditions. Note that LOS produces higher exports for all probabilities, suggesting that it is the most reliable/resilient of the scenarios.]</p>	<p>Please see response to comment 1755-100 regarding comment related to this attachment.</p>
1755	103	<p>Export Timing:</p> <p>A goal of BDCP and the Delta Plan is to shift exports to wetter years and to reduce pressure on drier years. A comparison of the average exports of No Action Alternative, low outflow scenario and high outflow scenario for all five year-types is presented in Figure 3.2. Based on the modeling data provided, there appears to be a significant increase in LOS exports in above average and wet years as compared to the NAA, with HOS intermediate between the two. This increase is accomplished through increased use of the North Delta facility during winter and spring periods when Old and Middle River restrictions most strongly impact South Delta operations.</p> <p>Below average, dry and critical dry year performance of BDCP is mixed (Figure 3.2). For LOS, overall exports during the drier years are higher than the NAA, while HOS exports are roughly the same as NAA. Exports, on average, for both the LOS and HOS tend to be higher than the NAA in the winter and early spring, and lower during the summer. This minimal change in exports during dry years stems, in comparison to wet years, from the constraints on North Delta facility operations. As is illustrated below, during dry periods the North Delta facility is used very little, creating pressure on South Delta facilities.</p> <p>In sum, although there are many regulatory and infrastructure constraints, BDCP does make use of the dual points of diversion to create modest increases in wet year exports and, depending on which export scenario is evaluated, equal to or greater exports in drier years. BDCP therefore does not achieve the broader goal of reducing pressure on the Delta during dry years by shifting exports to wet years.</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 to 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>For more information regarding operational criteria see Master Response 28. Also see Appendix 3A of the Final EIR/EIS for information on hydrology considerations. Regarding compliance with the Delta Reform Act, please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS.</p> <p>For more information regarding operational criteria see Master Response 28.</p>
1755	104	<p>Drought Performance:</p> <p>In the draft Plan and EIR/EIS, export performance of BDCP is summarized by presenting averages, typically linked to water year-types based on the Sacramento 40-30-30 index. Averaging fails to fully reflect how the system might be operated, however, because the complex rules governing operation can create significant year-to-year variability in exports (although see concerns over model uncertainties described in Chapter 1). This issue is particularly acute during multi-year droughts, when carryover storage in reservoirs is greatly reduced and demand increases significantly. To better illustrate how this system might perform we examined time series of model outputs during drought periods.</p> <p>There were two six-year droughts during the 20th Century that fall within the time period used for hydrologic simulations: water years 1929-34 and 1987-92. We focused on the 1987-92 period of record for evaluation because it has historical export data for comparison and facilities that are comparable to today. As shown in Figure 3.4, overall export timing and magnitude during the six-year drought were roughly the same for the No Action Alternative, low outflow scenario and high outflow scenario, with LOS performing marginally better for exports throughout the drought. [Footnote 3-4: Figure 3.4 highlights one of the issues not discussed in BDCP documentation. The environmental baseline for the BDCP assessment was determined to be the remanded BiOps, with provisions of one of the BiOps (high fall X2 flows in above normal and wet years) yet to be enacted. By choosing this as a baseline, the</p>	<p>. Please see Master Response 30 on modeling.</p> <p>Operations under the 2008 USFWS Biological Opinion and the 2009 NMFS Biological Opinion generally were implemented in 2009 at the time of the Notice of Preparation and Notice of Intent. Therefore, these assumptions were included in the Existing Conditions and the No Action Alternative. However, the Fall X2 actions were not implemented at the time of the Notice of Preparation and Notice of Intent. Therefore, Fall X2 is included in the No Action Alternative, but it is not included in the Existing Conditions assumptions. In Alternatives 4 and 4A, operational scenarios H1 and 4 H2, assumptions were included in these alternatives to provide operational criteria to protect Delta Smelt in a manner that would not include Fall X2.</p> <p>. For more information regarding the environmental baseline see Master Response 1, for more information regarding operational criteria see Master Response 28, and for information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p>

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		<p>plan does not provide a comparison with how the project was actually operated under historic conditions. This administrative decision to only compare proposed operations with the remanded BiOps masks the striking differences between historic export operations and those proposed under BDCP.] The significant exception to this pattern is in the one year in that sequence, 1989, where modest inflows to the Delta occurred in the winter. Once bypass flow criteria were met, the flexibility created by the North Delta facility was able to take advantage of these inflows during a period of high restrictions on South Delta pumping to protect smelt.</p>	
1755	105	<p>[ATT 3: ATT8: Figure 3.4: Graphs of exports for No Action Alternative, low outflow scenario and high outflow scenario under early long term conditions simulated for the 1987-92 drought, with historical exports are plotted for comparison. Important to note that ELT conditions take into account minor changes in climate and sea level rise by 2025 and cannot be compared specifically with historic conditions. In addition, historic conditions reflect human behavior; simulated conditions are guided by algorithms that do not account for human behavior.]</p>	Please see response to comment 1755-104 regarding comment related to this attachment.
1755	106	<p>Role of Reservoirs in Drought Management:</p> <p>Reservoir storage and operations play a critical role in drought management in California and greatly influence the timing and magnitude of Delta exports. The CALSIM modeling conducted for BDCP manages reservoirs within operational constraints described above and in detail in Chapter 3 of the Plan. The Plan makes it clear that the plan area does not include these reservoirs. Existing and future BiOps will govern their operations, not the terms of the Habitat Conservation Plan/Natural Community Conservation Plan permit. Despite this, the plan does envision significant changes to the operations of Oroville Reservoir under BDCP.</p> <p>The 1987-92 simulated operations of the three most important reservoirs -- Shasta, Oroville and Folsom -- are shown in Figure 3.5. These simulations have important biological implications that are covered in later chapters. For water supply reliability, there are several important observations:</p> <ul style="list-style-type: none"> <li>* As noted by the BDCP documentation, the No Action Alternative puts a great deal of pressure on upstream reservoirs to meet flow requirements, with Oroville providing most of the operational flexibility. In comparison to historic operations, the NAA significantly reduces storage, and thus carryover, in Shasta and Oroville, but has limited impact on Folsom, with the exception of the last two years of drought.</li> <li>* Under NAA all three reservoirs are at or near dead pool for the last two years of the drought cycle. Had water-year 1989 been closer in runoff to the other drought years, dead pool conditions would have occurred for the last three years of the six-year drought. Although a statement of the obvious, dead pool limits flexibility in managing water supply and ecosystem needs, both immediately downstream and in the Delta. This is likely to be of greatest concern for managing flow and temperature needs of winter- and spring-run Chinook salmon, particularly under warming climate conditions. Changes in flow releases to meet the needs of listed salmon are highly likely to impact export operations during dry periods. BDCP recognizes this as a concern but does not analyze the likely effects.</li> <li>* A surprising result of the simulations is that high outflow scenario drought operating procedures are more protective of reservoir storage than either No Action Alternative or low outflow scenario. In an extended drought, storage is more aggressively allocated to</li> </ul>	<p>The low storage levels and “dead pool” conditions presented in the CALSIM II monthly model in the EIR/EIS occur 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 that would occur during extreme wet or extreme dry periods. It should be noted that CEQA and NEPA analyses would need to be completed to modify operations in these extreme conditions.</p> <p>For more information regarding operational criteria see Master Response 28 and for information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33. Regarding storage, please see Master Response 37. Also see response to comment 1755-104.</p>

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		<p>either outflow (NAA) or exports (LOS), with both increasing the risk of creating dead pool conditions. This suggests that HOS operating criteria designed to protect smelt, may also do a better job of protecting upstream conditions for salmonids and sturgeon by increasing carryover storage. This, in turn may inadvertently improve water supply resiliency during drought.</p> <p>It is important to note that a time series analysis of one extended drought within a single simulation record does not give guidance on how the system is likely to perform in all future droughts. Each drought is different, with different storage (reservoir and groundwater) conditions at the start, different precipitation and temperature patterns, and different regulatory or operational responses. To test the above observations more thoroughly, a range of six-year drought scenarios, should be simulated and analyzed. Given that most climate models prescribe an increase in frequency and duration of drought, this anecdotal assessment highlights an issue that is likely to occur during the life of the project and have significant impacts on supply as well as ecosystem management.</p>	
1755	107	<p>[ATT 3: ATT9:</p> <p>Figure 3.5: Graphs of end of month storage for HOS, LOS and NAA under ELT conditions simulated for the 1987-92 drought. Historical storage (yellow histogram bars)is plotted for comparison. During the latter stages of the drought, dead pool conditions occur on all three reservoirs. Note that ELT conditions take into account minor changes in climate and sea level rise by 2025 and cannot be compared directly with historical conditions.]</p>	Please see response to comment 1755-106 regarding comment related to this attachment
1755	108	<p>Chapter 4: Environmental Flow Performance: Upstream and Inflows</p> <p>Introduction:</p> <p>The focus of the BDCP is principally on the legal Delta and adjacent Suisun Bay and Marsh, where export operations have the most direct impact on covered species. As discussed in Chapter 3, upstream management, including reservoir operations, consumptive uses of water, and flood management, play a critical role in inflow timing and volume. In this chapter, we examine how conservation measures #1 (water operations) and #2 (Yolo Bypass fisheries) meet conservation objectives that impact listed aquatic species.</p> <p>The focus of this chapter is on the environmental performance of proposed flow changes in the Sacramento watershed, including the Sacramento, Feather and American Rivers, and inflows to the Delta through the Yolo Bypass and the Sacramento River. Although inflow from the San Joaquin River is important and a determinant of conditions in the South Delta, BDCP does not envision significant changes in flows. For this reason, our analysis is focused only on the Sacramento watershed.</p> <p>Performance, as used here, is how well actions proposed by BDCP are likely to meet the goals and objectives of the plan. Although there are many issues discussed in the Plan for the Sacramento system and covered species, there are three central flow performance concerns: changes in reservoir release timing and magnitude and its impact on anadromous fishes; modifications to Fremont Weir and its benefits for floodplain habitat for outmigrating salmonids; and near- and far-field effects of North Delta diversion operations.</p> <p>Impaired Flow in an Impaired System:</p> <p>One of the objectives of BDCP and the Delta Plan -- and a concern of many on-governmental</p>	<p>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 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 incremental changes in Delta outflow under Alternative 4A compared to baseline conditions are a function of both the facility and operations assumptions, including north Delta intakes capacity of 9,000 cfs, OMR flow requirements, Fall X2 requirements, and the reduction in water supply availability due to increased north of Delta urban demands, sea level rise, and climate change (the last three assumptions, plus Fall X2 requirements, are included in both the No Action Alternative (ELT) and Alternative 4A, but not in Existing Conditions). Results for the range of changes in Delta outflow under Alternative 4A are presented in more detail in Appendix 5A, BDCP/California WaterFix EIR/S Modeling Technical Appendix. Changes in long-term average Delta outflow under Alternative 4A (ELT) as compared to the No Action Alternative (ELT) and Existing Conditions are shown in Figures 5-37 through 5-39 and Tables 5-10 through 5-12 in Chapter 5.</p> <p>To summarize changes in Delta outflow under Alternative 4A, late-fall and winter outflows remain similar or show minor reductions in Alternative 4A (ELT) compared to No Action Alternative (ELT) and are slightly higher relative to Existing Conditions. In the spring months, outflow would remain similar under Alternative 4A (ELT) as compared to No Action Alternative (ELT), and would be slightly reduced compared to Existing Conditions. In the fall months, outflow under Alternative 4A would increase relative to Existing Conditions, and as compared to the No Action Alternative (ELT), would be similar because of Fall X2 requirements in wet</p>

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		<p>organizations -- is to produce a flow regime with attributes that better support the life history stages of covered aquatic and riparian species. This objective is supported by a large body of national and international literature that has demonstrated how creating more natural flow regimes in highly regulated systems improves conditions for native species (see recent summary by Arthington, 2012). This issue has been at the forefront of controversial efforts by the State Water Resources Control Board to develop a basin plan that addresses flows (Fleenor et al., 2010).</p> <p>A flow regime that mimics natural seasonal variation is also considered by the scientific community in the Delta to be fundamental to better species management (Hanak et al., 2013). Restoring appropriate seasonal and intra-annual variability involves re-establishing flow timing, magnitude, duration, frequency and rates of change that drive key ecosystem attributes that, in turn, support native species (Figure 4.1).</p>	<p>and above-normal years.</p> <p>For more information on operational criteria please see Master Response 28.</p>
1755	109	<p>Although restoring elements of the natural flow regime is a worthwhile goal, it should be made clear that in the Delta and its tributaries there is little that remains natural (Bay Institute, 1998; Whipple et al., 2012). Added to these physical changes are profound shifts in biological conditions, including a Delta ecosystem dominated by non-native plants and animals (Lund et al., 2008; Baxter et al., 2010). For this reason, restoring a more naturally variable flow regime in an altered Delta and its watershed, while necessary for improving conditions for covered species, is unlikely to lead, by itself, to their recovery (Mount et al., 2012).</p>	<p>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. 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. For information on operational criteria and flow please see Master Response 28. For information on adaptive management and monitoring please see Master Response 33.</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>
1755	110	<p>[ATT 3: ATT10: Figure 4.1: Graph of unimpaired Sacramento River flow at Freeport for WY 1992-3 based on DAYFLOW data (DWR). This illustrates the range of natural seasonal variability in flow. Reproduction or migration of aquatic and riparian species are tied to timing, magnitude, frequency, duration and rate of change of flows. Flows, particularly winter and spring flood pulses, are necessary for geomorphic processes that support various life history stages. Flow regulation and land reclamation have significantly altered flow regime (see text for discussion).]</p>	<p>Please see response to comment 1755-108 regarding comment related to this attachment.</p>
1755	111	<p>In this chapter we sought to evaluate BDCP's potential impact on flow regimes upstream and into the Delta. It is infeasible -- if not inappropriate -- to reconstruct natural flow in the Central Valley given the significant changes in the landscape. Instead, we use unimpaired</p>	<p>Please see Response to Comment 1755-109.</p>

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		<p>flow (DWR 2007) as a proxy for a more naturally distributed flow regime. [Footnote 4-1: We focus here principally on the rivers that feed into the Delta rather than the Delta per se. An assessment of changes in outflow that occurs in response to changes in operations is contained in Appendix B.] Unimpaired flow is the volume of water that would flow by a given point if no upstream impoundments or diversions were in place. Estimating unimpaired flow is complicated and imprecise, yet is important in setting flow and water quality targets, particularly by the State Water Resources Control Board. It involves aggregating unimpaired and unregulated runoff from multiple basins that flow to the Delta. Unimpaired flow ignores surface water-groundwater interactions and storage or conveyance of flow in channels, floodplains and wetlands. For this reason, it is not a useful proxy for flow regime on daily time steps, but can be used as an imperfect proxy for annual and monthly flows. We follow that convention in this analysis.</p> <p>This simplified approach should not be over-interpreted. It is used to assess whether BDCP meets the overall goal of improving ecological conditions by creating a more natural seasonally variable flow regime. It does not address all issues of concern for listed fishes, such as winter- and spring-run Chinook salmon whose primary limitation is due to loss of upstream spawning and rearing habitat and high temperatures in existing channel habitat (Williams, 2006, 2009).</p>	
1755	112	<p>Main Rivers of the Sacramento Valley:</p> <p>Multiple biological goals and objectives of BDCP are associated with flow conditions on the Sacramento River and its two main tributaries, the Feather and American Rivers. All anadromous fishes covered by BDCP rely directly on these river systems for spawning, rearing and migration. As noted in Chapter 1, we focus here principally on winter- and spring-run Chinook since the BiOps that cover their life history needs have the greatest impact on water operations.</p> <p>With the exception of proposed changes to the Fremont Weir and the Yolo Bypass (CM#2), BDCP does not envision making significant investments in improving physical habitat upstream of the Delta, or addressing other stressors such as hatcheries, contaminants or harvest procedures (see summary in Williams, 2006, 2009). For this reason, most of the impact of BDCP on the Sacramento River and its tributaries upstream of the North Delta facilities will be associated with changes in flow releases from the three major reservoirs: Shasta, Oroville and Folsom.</p> <p>Simulated average flow conditions affected by changes in reservoir operations under BDCP are summarized in Figure 4.2A-C, including Sacramento River at Red Bluff, Feather River below Oroville Reservoir, and American River below Folsom. These flows, along with all other tributaries, aggregate to form the Freeport flow (Figure 4.2D) and the Yolo Bypass. These results include No Action Alternative, low outflow scenario and high outflow scenario flow scenarios and unimpaired flow under the five year-types based on the Sacramento River wetness index.</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> <p>Also see Master Response 8, Analysis of the Project as a Whole. For information on mitigation, please see Master Response 22. Also see Chapter 11 of the Final EIR/EIS for information Fish and Aquatic Resources.</p>
1755	113	<p>[ATT 3: ATT11:</p> <p>Figure 4.2A: Graphs of simulated average flow conditions of Sacramento River at Red Bluff.</p> <p>Monthly averages sorted by water year types for high outflow scenario, low outflow scenario, No Action Alternative and unimpaired flow. Unimpaired flow is based on current conditions and HOS, LOS and NAA are early long term conditions. See text for discussion.</p>	<p>Please see response to comment 1755-112 regarding comment related to this attachment.</p>

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		Data from BDCP CALSIM simulations.]	
1755	114	<p>[ATT 3: ATT12:</p> <p>Figure 4.2B: Graphs of simulated average flow conditions of Feather River.</p> <p>Monthly averages sorted by water year types for high outflow scenario, low outflow scenario, No Action Alternative and unimpaired flow. Unimpaired flow is based on current conditions and HOS, LOS and NAA are early long term conditions. See text for discussion. Data from BDCP CALSIM simulations.]</p>	Please see response to comment 1755-112 regarding comment related to this attachment.
1755	115	<p>[ATT 3: ATT13:</p> <p>Figure 4.2C: Graphs of simulated average flow conditions of American River.</p> <p>Monthly averages sorted by water year types for high outflow scenario, low outflow scenario, No Action Alternative and unimpaired flow. Unimpaired flow is based on current conditions and HOS, LOS and NAA are early long term conditions. See text for discussion. Data from BDCP CALSIM simulations.]</p>	Please see response to comment 1755-112 regarding comment related to this attachment.
1755	116	<p>[ATT 3: ATT14:</p> <p>Figure 4.2D: Graphs of flow at Freeport.</p> <p>Monthly averages sorted by water year types for high outflow scenario, low outflow scenario, No Action Alternative and unimpaired flow. Unimpaired flow is based on current conditions and HOS, LOS and NAA are early long term conditions. See text for discussion. Data from BDCP CALSIM simulations.]</p>	Please see response to comment 1755-112 regarding comment related to this attachment.
1755	117	<p>The constraints on reservoir operations are significant due to temperature and downstream flow requirements, based mostly on the 2009 BiOp. For this reason, the differences between scenarios are not large. However, a comparison of the impaired and unimpaired flow data allows for several general conclusions about the impact of BDCP on key attributes of Sacramento Valley flow regimes:</p> <ul style="list-style-type: none"> <li>- Winter Flood Pulse. With the exception of the American River, the winter flood pulse is significantly reduced over unimpaired conditions in the Sacramento Valley. The magnitude of this reduction reflects the size and operations of upstream impoundments relative to the total runoff of the watershed. The most dramatic impairment of winter flood pulses occurs on the Feather River where the pulse is virtually eliminated in most years. There are no substantive differences between low outflow scenario, high outflow scenario and No Action Alternative operations for winter flood pulses. The winter flood pulse is marginally higher under NAA at Freeport, but this reflects more frequent flows down the Yolo Bypass.</li> <li>- Spring Snowmelt Pulse. The rise and gradual recession of flow in the spring is, next to low baseflow conditions in the late summer, the most predictable element of the Sacramento Valley flow regime and is of high biological significance. As shown in Figures 4.2A-D, the spring snowmelt pulse is highly impaired due to impoundments and flow diversions. With the exception of the Feather River, there are no substantive differences between HOS, LOS and NAA impacts on the spring snowmelt pulse in the Sacramento Valley. On the Feather, HOS flow operations designed to improve spring outflow in the Delta, lead to significant improvement in spring conditions in all but dry and critical year types.</li> </ul>	<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 more information regarding operational criteria see Master Response 28 and for information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p>

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		<p>- Summer/Fall Baseflow. The timing and magnitude of reservoir releases dominates the summer/fall flow regime of the basin (Figure 4.2A-D). These releases are to meet the complex array of temperature and flow requirements downstream of the dams, irrigation demands upstream of the Delta, inflows to meet export demands, and outflows to meet water quality and habitat standards. Summer/fall baseflow flow regimes are highly altered with flows three to five times higher than unimpaired flows. With the exception of the Feather River, BDCP does not change summer/fall baseflow conditions. Under HOS and LOS simulations, the summer flows on the Feather are reduced, creating marginal improvement in flow regime.</p>	
1755	118	<p>Yolo Bypass Flows:</p> <p>One of the more prominent conservation measures (CM#2) of BDCP is the modification of the Fremont Weir to promote increases in the frequency of winter and early spring inundation of the Yolo Bypass. A well-established and growing body of evidence, involving monitoring data, field experimentation and, to a lesser extent, life cycle models indicate high benefit of floodplain habitat to foraging juvenile salmon (see BDPC documentation for a full summary). This stems from the use of high value, off-channel habitat by juveniles, who, under optimal bioenergetic conditions and low predation pressures grow at high rates, increasing their survivorship through the Delta. Fish that either forage on the Yolo Bypass and/or use it as a migration corridor will not be impacted by near-field effects of the proposed North Delta diversion facilities. Fish using the Bypass are also less likely to enter the interior of the Delta where predation pressures are high. Finally, juveniles that use the Bypass leave the Delta later in the season, increasing the likelihood of arriving at the ocean during higher upwelling periods with better food availability.</p> <p>Currently flow onto the Yolo Bypass from the Sacramento River only occurs when the Verona gauge exceeds 55,000 cfs. Modifications to the Fremont Weir would allow 1,000 cfs to flow onto the floodplain when flow at Verona exceeds 25,000 cfs. Flow through the Weir would climb to 6000 cfs when the river approaches 55,000 cfs. Above 55,000 cfs flow into the Bypass would be similar to No Action Alternative conditions. In addition to allowing flood flows, the weir would be modified to allow 100 cfs attraction flows to a fish ladder to improve upstream passage of adult salmon, steelhead and sturgeon (passage issues not evaluated here).</p> <p>The average annual flow of the Yolo Bypass is approximately 1.5 maf. Under No Action Alternative, high outflow scenario and low outflow scenario, this amount would not differ significantly since the majority of flow volume on the Bypass occurs when the Sacramento overtops Fremont Weir and the Sacramento Weir (Figure 4.3). However, the timing, frequency, and duration of floodplain inundation -- key elements of the natural flow regime -- would change substantially with the proposed modification of Fremont Weir.</p>	<p>Please see response to comment 1755-112 regarding habitat restoration. Also see Master Response 28 for information on operational criteria and flow.</p>
1755	119	<p>[ATT 3: ATT15:</p> <p>Figure 4.3: Graphs of average monthly flows for the Yolo Bypass under high outflow scenario, low outflow scenario and No Action Alternative under early long term conditions for different year types. Note changes in scale.]</p>	<p>Please see response to comment 1755-118 regarding comment related to this attachment.</p>
1755	120	<p>- Flood Frequency. The frequency of inundation of the Bypass increases significantly under BDCP. Under current conditions there is a roughly 40% annual probability of flooding on the Yolo Bypass. Under BDCP this increases to more than 70% annual probability (BDCP</p>	<p>The new proposed project, Alternative 4A, no longer includes Conservation Measure 2 (Yolo Bypass Enhancements). Instead, Yolo Bypass Enhancements would be assumed to occur as part of the No Action Alternative because they are required by the existing BiOps. For more information on the potential benefits</p>

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		<p>statistics). The largest change occurs in drier years (Figure 4.3).</p> <p>- Flood Duration. Multiple studies have shown that flood duration, which allows for nutrient cycling and primary production, is essential for supporting juvenile salmonid foraging (Sommer et al., 2001; Williams, 2006, 2009). Modifications to Fremont Weir increase flood durations with high habitat benefits. Under current operations, flood durations aggregate to an average of 25 days per year. This would not change under No Action Alternative in the early long term. Under both high outflow scenario and low outflow scenario ELT this would increase more than three-fold to an average of 81 days per year.</p> <p>- Flood Timing. In addition to more frequent, longer-lasting flooding conditions, modifications to the Fremont Weir would expand the flood season, particularly in drier years (Figure 4.3). This expansion helps divert early migrants, such as winter-run Chinook salmon and later migrants, such as spring-run and fall-run Chinook, onto the floodplain. For example, based on BDCP data, we estimate that days of flooding above 1000 cfs on the Bypass will more than double in January and triple in April.</p>	<p>of Yolo Bypass enhancements to fish species, please see Chapter 3 of the BDCP.</p> <p>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>
1755	121	<p>Yolo Bypass performance for listed salmon:</p> <p>Although CM#2 achieves the broader objective of improving the amount and quality of floodplain habitat, principally by restoring a more natural flow regime, it's effectiveness in supporting federally listed species of salmon (the focus of this review) is somewhat limited. The BDCP consultants modeled the overall benefits of the Yolo Bypass flows to out-migrating and foraging juveniles. For winter-run Chinook salmon, the benefits were modest with an estimate 1-8% increase in escapement. The limited benefit of the Yolo Bypass is, according to the BDCP model results, due to the small percentage of juveniles likely to be diverted onto the floodplain. This stems from the fact that most migration begins in December and January coincident with the first pulse flows of the season and does not coincide with peak inundation periods of the Bypass.</p> <p>Greater benefit, albeit still limited, occurs for spring-run Chinook salmon. The bulk of juvenile out-migration takes place during the optimal months for floodplain inundation: February through March. However, two factors reduce the effectiveness of Yolo Bypass for spring-run according to BDCP documents. The majority of spring-run Chinook salmon come from hatcheries in the Feather River. Juveniles leaving the Feather are only diverted onto the Yolo Bypass during rare high flow events, leaving the Sacramento River as their principal migration route to the Delta. Naturally spawned fish in Butte Creek use the Sutter Bypass as their principal migration route. Like Feather River fish, they too only move access the Yolo Bypass during rare high flow events. Naturally spawned spring-run in Battle, Clear, Mill and Deer Creek pass Fremont Weir on their out-migration paths and will benefit most from likely access to the Bypass.</p> <p>Second, according to BDCP models, most spring-run juveniles reach the Delta, and presumably the Yolo Bypass, as yearling smolts. In this stage, they are presumed by BDCP consultants to not take full advantage of the high quality foraging conditions of the Bypass, but use it principally as a migration corridor. BDCP consultants estimate that 90% of spring-run Chinook in the Yolo Bypass are migrants, rather than foraging fish. The BDCP consultants readily note that this proportion reflects the split between migrants and foraging characteristics in hatchery fish and may not be indicative of proportions of wild fish. Our consultation with several salmon biologists suggests that the distinction between foragers and migrants is arbitrary and likely does not reflect actual behavior of juveniles on</p>	<p>The EIR/EIS analyzes all alternatives, including Alternative 4A. Note that Alternative 4A does not propose any actions in the Yolo Bypass and thus none of the provisions of CM2 would be implemented.</p> <p>The existing operation of the SWP and CVP pumps in the south Delta can cause reversals in river flows, potentially altering salmon migratory patterns. The new system would reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish. Minimizing south Delta pumping would provide more natural east-west flow patterns (RDEIR/SDEIS Section 4.1). Overall reductions in OMR reverse flows under all flow scenarios for the proposed project would be beneficial with corresponding increase in net positive downstream flows, during the migration period of Chinook salmon through the interior Delta channels (Appendix B, Supplemental Modeling for Alternative 4A, Section B.7 (RDEIR/SDEIS Section 4.3.7). Operations 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). For more on adaptive management, please see Master Response 33.</p>

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		<p>the Bypass. In addition, there is emerging evidence that a high percentage of naturally spawned fish move out as fry and migrate during high winter flows (pers. comm., P.B. Moyle, 2013).</p> <p>The BDCP consultants used several approaches to model the effect of the Yolo Bypass on survivorship. They acknowledge that current modeling tools are not well-suited to this kind of analysis. They developed a simple bioenergetic model for floodplain rearing, but told the panel that they felt it did not fully capture the benefits of the Bypass, and that their estimates of survivorship were conservatively low. Despite these limitations the BDCP models along with a growing body of literature suggest that spring-run juveniles as well as winter-run juveniles that access the Bypass are likely to have significantly higher survival rates to Chipps Island and presumably higher adult escapement. [Footnote 4-2: The focus of this chapter is on spring- and winter-run Chinook. There is very significant benefit to other covered species, particularly fall-run Chinook and Sacramento splittail that can take advantage of Yolo Bypass flooding more readily.]</p>	
1755	122	<p>North Delta Facility Impacts and Mitigation:</p> <p>The new point of diversion along the Sacramento River is likely to impact all covered fish that either use the main channel of the Sacramento for migration or rearing, or are indirectly affected by downstream changes in flow volume and timing. These impacts are some of the most difficult to assess due to uncertainties about design and operation of the facilities (no comparable facility exists to calibrate models) and the relationship between downstream actions, such as tidal marsh restoration, and flows. This section assesses BDCP's evaluation of near-field (adjacent to the facility) and far-field (downstream from the facility) effects.</p> <p>Near-Field Effects:</p> <p>The preferred project involves the construction of three screened intakes, along the left bank of the Sacramento River, in the vicinity of the town of Hood. Each screen will be capable of withdrawing up to 3,000 cubic feet per second [cfs]. In our view, the BDCP consultants have properly identified the two main sources of near field effects of the facility on out-migrating salmonids: losses due to impingement on the intake screens and losses due to predation near the diversion. However, we are uncertain about the effectiveness of proposed mitigation for these effects.</p> <p>To mitigate for impingement potential, the consultants propose real-time management of pumping regimes relative to channel flow in order to maintain approach and sweeping velocities that reduce contact with intake screens. This real-time management would be informed by upstream monitoring of outmigrants. This issue remains a high uncertainty for operations of the facility ("low certainty" in the parlance of BDCP). Conceptually, a good adaptive management and research program coupled with real-time management could reduce impacts. However, as of this writing, the specifics of this program are not provided by BDCP (see discussion in Chapters 8, 9 this report) and we are unable to evaluate how effective it might be.</p> <p>A greater near-field effect of the facility is the high likelihood of concentration of predators near the facility, with resulting losses of migrants and foragers due to predation. Predators take advantage of concentrated prey and velocity refugia at physical structures throughout the Delta (Vogel, 2008), and will presumably do the same at the north Delta intake facilities. The BDCP consultants use various modeling approaches to estimate potential predation</p>	<p>The north Delta intakes will have positive-barrier fish screens that would be designed to established protection standards for salmonids and delta smelt, and would comply with CDFW, NMFS, and USFWS fish screening criteria. Appendix 3F of the EIR/EIS provides details on the development of intakes and fish screening technology, as well as the Conceptual Engineering Reports (CERs). It is proposed that monitoring and research would be conducted to inform the fish screen design, construction, and operation in order to maximize their effectiveness. Dual operations provides for flexibility that will better protect the fish based on real time data. For more information on adaptive management and monitoring please see Master Response 33.</p> <p>Environmental Commitment 15 (Localized Reduction of Predatory Fishes) is not intended to entirely remove predators at any location or substantially alter the abundance of predators at the scale of the Delta system. Instead, EC15 proposes to reduce localized abundance of predatory fishes at locations of high predation risk (i.e., predation hotspots) associated with construction and operation of the proposed and existing water conveyance facilities, through active capture methods (boat electrofishing, hook-and-line fishing, predator lottery fishing tournaments, and other means of passive and active capture). A number of studies, cited in the Effects Analysis, provide evidence that predation at such hotspots is of concern to covered fish species. For a more detailed discussion of the existing predation issues in the South Delta, please see BDCP Chapter 3, Conservation Strategy, Section 3.4.1.2, BDCP Appendix 5.F, Biological Stressors on Covered Fish, and Chapter 11 of the RDEIR/SDEIS.</p> <p>EC15 would remove predator refuge habitat and reduce predator abundance in the construction areas. At a minimum, EC15 will target the removal of an amount of predator refuge commensurate with the amount that may be created by construction of water conveyance facilities. These measures are expected to fully mitigate any indirect effect on predation rates associated with construction. Because of uncertainties regarding treatment methods and efficacy, implementation of EC15 will involve discrete study pilot projects and research actions coupled with an adaptive management and monitoring program to evaluate effectiveness.</p>

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		<p>losses, including comparison with estimates of losses at known structures, such as diversion screens of the Glenn-Colusa Irrigation District. Estimated predation losses for juvenile winter run Chinook that pass the facility vary from as low as 1% to as high as 12% (we did not find statistics for spring-run Chinook salmon losses). The higher predation loss values would have significant population-level impacts on winter-run Chinook and would fail to meet objectives of BDCP. The consultants acknowledge high levels of uncertainty about predation effects at the facility. The solution, as with most issues with high uncertainty in BDCP, is to defer this to adaptive management of the project, including unspecified predator control programs and real time management of flows. Based on our experience in the Delta, we consider this to be a significant, unresolved management issue.</p>	
1755	123	<p>Far-Field Effects:</p> <p>The North Delta facility is expected to provide an average of roughly half of the exports from the Delta. As outlined in Chapter 3, operations of the facility are highly constrained by flow and water quality regulations, upstream water use, reservoir operations and hydrology. The simulated operations of the north Delta facility are summarized in Figure 4.4, including a measure of the proportion of channel flow that is diverted.</p> <p>There are significant seasonal and interannual variations in operation of the north Delta facility that will drive far-field effects [Footnote 4-3: We did not evaluate the effects of size of the facility and its level of use. However, it is worth noting in Figure 4.4 how often average monthly exports approach facility capacity. Using a monthly average greater than 8,000 cubic feet per second [cfs] as an indicator of periodic use of full capacity. This only occurs in February and March in wet years, and in March of above average years. This is roughly 5% of the total months, suggesting that operational and regulatory constraints, rather than facility size, determine export volumes]. During wet and above average water years, pumping regimes are most aggressive, particularly during the summer and early fall when 25% to as much as 39% of channel flow is diverted. Diversions, as a percentage of channel flow, decline dramatically in below normal, dry and critical years. In addition, pumping regimes are highly protective of channel flow in December, reflecting the restrictions on exports to protect initial pulse flows for winter-run Chinook. As expected, the High Outflow Scenario [HOS], designed to improve Delta outflow, results in the most protective pumping regime for bypass flows at the north Delta facility.</p>	<p>Please see Maser Response 28 regarding operational criteria and Master Response 33 regarding adaptive management.</p>
1755	124	<p>BDCP documents acknowledge that the reductions in bypass flow create multiple far field effects that impact listed salmon. These include reduced attraction flows for migrating adult salmon, increased losses of juvenile salmon migrants and foragers due to longer transit times to the Delta, and diversion into the interior Delta where predation and/or entrainment losses are high. These operations also affect total Delta outflow. [Footnote 4-4: Appendix B presents a summary of Delta outflow and the magnitude of impairment of flows from the Sacramento Valley. The latter uses a simplified impairment index.]</p> <p>The BDCP consultants use multiple modeling approaches to address the far field effects of the North Delta facility. The main model used is the Delta Passage Model (DPM) that tracks smolt survival through the Delta. This model and others summarized in Appendix 5C of the Effects Analysis all draw the same conclusion: there is an increase in losses of winter- and spring-run Chinook salmon migrants associated with reduced flows in the bypass reach from Hood to Rio Vista. The magnitude of this impact varies depending upon year type (wetter years have reduced losses) and magnitude of flow reduction associated with pumping (up to 35% decreases in flows during some migration periods). These results are not surprising</p>	<p>Chapter 11 in the Final EIR/EIS analyzes migration effects on salmonids related to reductions in bypass flows downstream of the north Delta intakes. The proposed project includes real-time operations, including north Delta intake transitional criteria to minimize and avoid impacts to salmonids migrating past the north Delta intakes. Please see Chapter 3 for a detailed description of the north Delta intake transitional criteria and real-time operations.</p> <p>Also see Master Response 33 on adaptive management and monitoring. For information on the development of operational criteria and the effects on Fish and Aquatic Resources please see Master Response 17.</p>

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		since there is a long-established relationship between transit time and survivorship for smolts leaving the Sacramento River (Newman, 2003; Perry et al., 2010).	
1755	125	[ATT 3: ATT16:  Figure 4.4. Graphs of average monthly export flows of North Delta diversion facility under HOS and LOS ELT for different year types, and percentage of total bypass channel flow exported.]	Please see response to comment 1755-123 regarding comment related to this attachment.
1755	126	<p>BDCP proposes to mitigate the increase in losses of smolts associated with far-field effects through six strategies:</p> <ul style="list-style-type: none"> <li>* Tiered pumping regimes to reduce withdrawals during the initial winter flood pulse (described in Chapter 3)</li> <li>* Real-time operational changes that reduce export pumping when monitoring indicates that large numbers of migrants have entered the reach upstream of the facility</li> <li>* Flow management that reduces tidal reversals at Georgiana Slough, decreasing the likelihood of smolts diverting into the interior of the Delta</li> <li>* Non-physical barriers at Georgiana Slough</li> <li>* Reductions in entrainment at the South Delta facility due to reduced export pumping</li> <li>* Increased diversion of foragers and migrants onto the Yolo Bypass</li> <li>* Improved channel margin, floodplain and tidal marsh habitat to support foraging juveniles</li> </ul> <p>The benefits of the last of these strategies -- habitat restoration -- are not captured in the survivorship modeling that was completed by BDCP consultants (see chapter 7 for a discussion). In addition, the models do not incorporate real-time operations adjustments since the scope and terms of these operations have yet to be determined. The remaining strategies are incorporated into models used to assess smolt survivorship. Closely examined, BDCP model results indicate that these measures, in combination, roughly offset the losses created by reductions in flows and increases in predation in the bypass reach, meeting the standard of mitigation. There is no indication that these actions would result in substantial improvement in conditions for listed salmon. This includes the Yolo Bypass, which provides significant benefits for other covered species.</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> <p>For information on adaptive management, please see Master Response 33. For information on mitigation measures please see Master Response 22.</p>
1755	127	<p>Chapter 5: In-Delta Flow Performance</p> <p>Concerns over modeling:</p> <p>As noted in Chapter 1 of this review, we have concerns over the use and over-interpretation of the modeling data provided to us. In conducting our analysis for this chapter and the following chapter on impacts of outflows on smelt, we have relied on output from CALSIM under various scenarios. Our analysis revealed several apparent anomalies in model output. Although we received clear explanations of the origin of these anomalies from the BDCP consultants, we remain concerned that the model output is unrealistic for projecting actual project operations and the resultant flows. In particular, certain modeled conditions arise through artifact that provide substantial improvements in conditions for delta smelt. Thus,</p>	<p>As stated in this comment, the basis of the hydrologic and water quality model is the CALSIM II model which is a monthly model that incorporates assumptions about daily operational changes, and the model results should not be used in a predictive manner to determine absolute values. The electrical conductivity analysis is based upon the DSM2 model that uses the monthly model results from CALSIM II and disaggregates the values using historical patterns for smaller time steps and assumptions for tidal conditions. These types of models are the most appropriate to analyze potential changes due to different operational assumptions for the SWP and CVP. However, as described in Appendix 5A of the EIR/EIS, these models cannot be used in a predictive manner to define absolute values. Rather, they must be used in a comparative manner to indicate basic changes between the action alternatives, and to understand the changes that could occur as compared to the Existing Conditions and the No Action Alternative.</p> <p>Additional modeling information is also provided in Appendix B, Supplemental Modeling for New</p>

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		<p>conclusions drawn on the basis of these models rest on an unreliable foundation. These concerns are focused on Delta outflow during fall and southward flow in the southern Delta during winter. These flows have been linked to habitat and survival of delta smelt.</p> <p>October:</p> <p>The USFWS Biological Opinion for delta smelt includes a fall X2 standard that applies following wet springs. Flows are usually low during this season so small variations in flow can have substantial effects on the location and area of the low salinity zone, and hence potentially on habitat conditions for smelt.</p> <p>For various reasons X2 calculated by CALSIM differs substantially from that determined from outflow as in Jassby et al. (1995). We therefore focused on outflow as determined by CALSIM, rather than X2 as provided by BDCP modelers.</p> <p>For this analysis we sorted flow data into a ranked series from lowest to highest values of Delta inflow under No Action Alternative (NAA). In Octobers of most years in the drier half of the series, outflow under high outflow scenario (HOS) and low outflow scenario (LOS) is up to twice that under NAA (Figure 5.1; median 77% higher for these 41 years). By contrast, during years of high inflow (right-hand half of Figure 5.1), HOS and NAA outflows roughly track each other, while LOS is much lower because the fall X2 requirement does not apply to that scenario. The anomaly occurring under dry conditions is not balanced by flows in other fall months. A few anomalies like those found in October crop up in November, but otherwise in those months either all three outflows track each other or LOS is lower.</p> <p>To our knowledge there is no regulatory or operational requirement for reduced outflow under NAA or increased outflow under HOS or LOS in dry Octobers. Furthermore, there would be no reason to focus such a requirement in only one month if it were meant to benefit delta smelt, since they are present in the low-salinity zone from summer through fall. Outflow in fall can affect delta smelt recruitment so the modeled outflows can result in considerable differences in predicted recruitment under the three modeled scenarios (Chapter 6). We do not find these differences compelling because of a lack of a regulatory or other basis for the high outflows under HOS and LOS in dry Octobers.</p> <p>January:</p> <p>January has been the month of greatest adult delta smelt entrainment historically, so the modeled conditions in January can have large impacts on forecasts of adult survival. The CALSIM modeling included a requirement that Old and Middle River flows during January be zero in wet years, no more negative than -3500 in above-normal and below-normal years, and no more negative than -5000 in dry and critical years. However, no estimates of current year type are possible in January, and rather than presume perfect foresight or use information available up to that point the modelers chose to operate the simulated system for January using the requirements that applied to the previous year type. Because dry Januaries can follow wet years, this resulted in an anomalous condition in which requirements for wet years applied during dry Januaries.</p> <p>As a result of this anomaly, the modeled scenarios (LOS and HOS) called for reductions in export flows in Januaries following wet years, which substantially increased OMR during many Januaries at the dry end of the historical range for that month (Figure 5.2). This is unrealistic for several reasons. First, the actual values don't conform to the model requirements of 0, -3500 or -5000 cfs, depending on previous year type; instead they are</p>	<p>Alternatives in the 2015 RDEIR/SDEIS and Master Response 30. For more information regarding adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p> <p>Operational criteria are discussed on Master Response 28.</p>

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		<p>quite variable and achieve zero rarely. Thus, there is no clear regulatory basis for these flows.</p> <p>Second, the reduction in export flows was sometimes accomplished through increased outflow rather than reduced reservoir releases or increased exports from the North Delta (Figure 5.2). Thus, many January outflows during dry periods were much greater than the corresponding flows of the NAA alternative.</p> <p>Consequences:</p> <p>The anomalies discussed above seem to arise through the application of rules and constraints designed in some cases for real-time operations, using a model with a monthly time step. We understand and appreciate the difficulty in modeling such a complex system and the problems that would arise in attempting to mimic variation on a daily time scale. Furthermore, we trust that the modeling team has made every effort to produce output that conforms to the constraints and the modeled hydrology. Nevertheless, the specific model outputs we focus on above seem unrealistic, particularly since these anomalies are largely confined to October and January. We do not think the system is likely to be operated in real time to achieve the flows shown in model output.</p> <p>Thus, discussions in this and the next chapter should be accompanied with this caveat: these apply only if the system were actually to be operated to achieve the flows indicated by the models. If rules are not in place to ensure these flows are achieved, the benefits to delta smelt (and presumably other species) will not be realized.</p>	
1755	128	<p>[ATT 3: ATT17:</p> <p>Figure 5.1. Graph of net Delta outflow in October under the three scenarios sorted by inflow as determined by CALSIM under NAA; i.e., sequence 1 is the lowest inflow and 82 the highest. The gray arrow points out the region of interest where outflow under HOS and LOS is as much as double that under NAA. Outflow is plotted on a log scale to show proportional differences among scenarios especially at low flows, and because X2 can be modeled as a function of the log of outflow. The highest two outflows have been cut off to focus the figure on the lower values.]</p>	Please see response to comment 1755-127 regarding comment related to this attachment.
1755	129	<p>[ATT 3: ATT18:</p> <p>Figure 5.2. Graph of January flow conditions compared between the two modeled scenarios (LOS, top; HOS, bottom) as the differences from the flows under NAA. The colors show the range of NAA inflow. Under the LOS there were many Januaries when inflow was low but the outflow and OMR flow were increased by about the same amount over NAA.]</p>	Please see response to comment 1755-127 regarding comment related to this attachment.
1755	130	<p>Analysis of flows:</p> <p>Construction of a new export facility will not by itself achieve the goals of restoring more natural flow patterns in the Delta; the effects of such a facility are entirely dependent upon its operational rules. We assessed how much the modeled operational scenarios (high outflow scenario and low outflow scenario) achieve the goals of restoring net natural flow directions within the Delta. In recent years, the Biological Opinions for delta smelt and salmonids have directed attention to net flows in Old and Middle Rivers (OMR), which are the main channels carrying Sacramento water to the export facilities in the south Delta. OMR flows show relationships with salvage of some fish species at the fish facilities and are</p>	For more information regarding operational criteria see Master Response 28 and for more information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.

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		<p>presumed to reflect entrainment risk to fish in the Delta, i.e. the direct effects of the projects. In earlier years, focus was on net flows in the lower San Joaquin River (QWEST) as a more general measure of the impacts of water management on net flows in the Delta, which were believed to cause indirect effects on fish populations.</p> <p>OMR and QWEST flows are two measures for the effectiveness of CM#1 in restoring more seaward flows in the Delta (see Chapter 6 for an estimate of effects of the modeled flows on delta smelt entrainment). Here we examine both the changes in seaward flows and the degree of negative flows as predicted from CALSIM models.</p> <p>A north Delta diversion will increase the frequency of positive net OMR and QWEST flows and reduce negative values to the extent that exports from the north Delta reduce exports from the south Delta. However, BDCP calls for continued use of south Delta diversion facilities and greatly restricts the operation of the north Delta diversion, particularly in dry periods and early winter. Thus, restoration of seaward flows in the Delta must be viewed in the context of the timing and conditions when the north Delta diversion can be used.</p> <p>We describe how LOS and HOS alter the incidence and degree of reverse flows during the seasons of sensitivity for the covered fish. For each season of sensitivity, we group results by quartiles of outflow to assess how changes in flows occur under drier vs. wetter conditions. Low flows in the winter and spring are when concern over reverse flows is greatest for most species.</p>	
1755	131	<p>Direct effects:</p> <p>Direct effects are entrainment, or the number of fish diverted into the facilities. This number is not known for any species because substantial numbers of fish are lost in the waterways leading to the fish facilities and through the louvers at the fish facilities. Salvage is therefore a poor measure of entrainment effects, but there are no other direct measures. Estimates of entrainment as a proportion of total population of delta smelt are presented in Chapter 6. Such an analysis has not been developed for any other species of concern. Therefore, to broaden the analysis to all species we examined changes in modeled flow in Old and Middle Rivers (OMR). This measure has been used in both Biological Opinions. OMR flow is both calculated by models and measured in the field; it is roughly equal to San Joaquin River inflow minus total exports. Because San Joaquin inflows are less than total exports under all but flood conditions, OMR flows are usually negative. We assume OMR is the primary focus of CM#1's goal to "reduce the incidence of reverse flow". To broaden the question we also assess the degree to which flows are made less negative by the alternatives.</p>	<p>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 at 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, of the Final EIR/EIS.</p> <p>Also see Master Response 22 regarding mitigation.</p>
1755	132	<p>Incidence of reverse flow:</p> <p>Because 'incidence' is a measure of frequency, the "Incidence of reverse flows" is the frequency with which Old and Middle Rivers (OMR) is changed from negative under No Action Alternative (NAA) to zero or positive (northward) under the proposed alternatives; because model output is available by month, we examined frequency on a monthly basis (Table 1). The distribution across months of the change in net OMR direction implies that effects on each species will depend on its season of sensitivity.</p> <p>The results below are consistent with the goal of CM#1 of achieving a greater frequency of positive net flows in Delta channels by shifting exports to the north Delta diversion site. This</p>	<p>The existing operation of the SWP and CVP pumps in the south Delta can cause reversals in river flows, potentially altering salmon migratory patterns. The new system would reduce the ongoing physical impacts associated with sole reliance on the southern diversion facilities and allow for greater operational flexibility to better protect fish. Minimizing south Delta pumping would provide more natural east-west flow patterns (RDEIR/SDEIS Section 4.1). Overall reductions in OMR reverse flows under all flow scenarios for the proposed project would be beneficial with corresponding increase in net positive downstream flows, during the migration period of Chinook salmon through the interior Delta channels (Appendix B, Supplemental Modeling for Alternative 4A, Section B.7 (RDEIR/SDEIS Section 4.3.7)). Operations would still be consistent</p>

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		<p>is true more for high outflow scenario (HOS) than low outflow scenario (LOS) operations.</p> <p>LOS effects. The LOS reduced the incidence of negative flows by 5% overall (50 months out of the 984 months modeled; Table 1). Under NAA 110 months had positive (northward) OMR flows while 160 months had positive flows under LOS. Positive or zero OMR flows under LOS coincided with negative flows under NAA in all months save August, but most frequently in January-March. There were 21 months when OMR flows were positive under NAA but negative under LOS in April and May (Table 1).</p> <p>The shift to positive OMR flows under LOS was sometimes quite large (about 6000 cfs) and occurred almost solely under higher river inflows during December through June. The occasions when NAA alone produced positive OMR flow occurred only in April and May and the change in OMR flows between NAA and LOS were small (&lt;1000 cfs).</p> <p>HOS effects. The HOS had a more substantial effect on the incidence of negative flows than LOS (Table 1). There were only 13 instances when positive OMR flows under NAA were negative under the HOS, and the differences were very small in those cases. As with LOS, the changed OMR status happened in all months save August. The most noticeable difference between HOS and the other two alternatives was in September and November when HOS was northward about a third of the time while NAA was always southward and LOS northward only a few times. The low frequency of northward flows under HOS in October may be related to the anomalies in outflow identified above, but the reasons for the otherwise high frequency of positive OMR flows in fall under HOS are obscure, as they are not called for by regulations and no fishes of concern are vulnerable to export entrainment at that time.</p>	<p>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).</p>
1755	133	<p>[ATT 3: ATT19:</p> <p>Table 1. Frequency by month of northward (including a few zero flows) or southward flows under NAA vs. LOS, and NAA vs. HOS. Columns in italics indicate those years and months when the direction of flow differed between NAA and the selected scenario. For example, in April there were 47 years when NAA flow was northward, in 5 of which LOS was southward, and 35 years when both flows were southward, out of a total of 82 years.]</p>	<p>Please see response to comment 1755-132 regarding comment related to this attachment</p>
1755	134	<p>Magnitude of negative Old and Middle River (OMR) flows:</p> <p>Entrainment rates are a function of population distribution and abundance, season of occurrence in the Delta, and flow conditions including export rates (or OMR conditions). The months of vulnerability for each species of concern were taken from the BDCP documents. For adult longfin and delta smelt the season of vulnerability is from December through March. For juvenile delta smelt the season is from March through June.</p> <p>The effects of overall flow conditions, i.e. how relatively wet or dry it is, were assessed by grouping the months of vulnerability for all 82 modeled years into quartiles of outflow in the NAA; e.g., for adult delta smelt which are considered vulnerable during December-March, there were 82 months in each quartile of outflow. We examined conditions of OMR, river inflow and outflow under several operational scenarios. We examined differences under four levels of wetness for each month using outflow in the month as a measure of wetness. Historically fish are more often salvaged under drier conditions than under.</p> <p>In Figure 5.3 we present comparisons of the high outflow scenario (HOS) and low outflow scenario (LOS) scenarios for each quartile of outflow (under the NAA scenario to ensure</p>	<p>For information regarding operational criteria and OMR flows see Master Response 28 for more information regarding adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p>

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		<p>comparison of the same years in each graph).</p> <p>Under the HOS and LOS alternatives, OMR differs from NAA during the seasons of sensitivity for adult delta smelt (Dec-Mar) and juvenile delta smelt (April-June).</p> <p>Three patterns can be seen:</p> <ol style="list-style-type: none"> <li>1. In the season of vulnerability for adult smelt (December-March), HOS and LOS both show about a 1000-5000 cfs increase toward positive in OMR under all quartiles of outflow, but all OMR values are strongly negative except in the wettest quartile of the data. Exports in December and January can be high and the use of a north Delta diversion can improve OMR (but see "Concerns over modeling" above). For juvenile smelt, the increase in OMR flow under LOS and HOS is smaller and less consistent. In all cases the level of OMR flow is much less negative than in December-March.</li> <li>2. The HOS and LOS alternatives differ only slightly except during the drier periods when OMR flow is slightly less negative under HOS than under LOS.</li> <li>3. Under wetter conditions all alternatives produce median OMR flows in the range targeted as protective in the Biological Opinions (more positive than -5000, but see Modeled Impacts on Delta Smelt in Chapter 6). The use of North Delta Diversion (NDD) under high-flow conditions allows the HOS and LOS to avoid the extreme negative OMR values that occur under NAA because of the high south Delta export rates that are possible then.</li> </ol> <p>Thus, in summary, model results suggest that reverse flows in the south Delta become more positive under both LOS and HOS for all quartiles of outflow. These changes can be seen both in the frequency and in the distribution of flows in the two seasons of vulnerability and the four quartiles of NAA outflow. In wetter months the north Delta diversion does not fully replace south Delta exports until river inflows are relatively high, so that OMR remains negative in most months of smelt vulnerability. Changes in OMR during the period of vulnerability of young delta smelt are smaller than those during December-March because all alternatives are constrained by the Biological Opinions to a much higher baseline OMR flow.</p>	
1755	135	<p>[ATT 3: ATT20:</p> <p>Figure 5.3. Graphs of values of OMR under the three alternatives for BDCP shown for quartiles of outflow under the No-Action Alternative. Boxes show first and third quartiles with the median as a white bar. The whiskers encompass points within 1.5 times the interquartile range, and the short lines are outliers. Top, period when adult longfin and delta smelt are vulnerable (Dec-March). Bottom, period when juvenile delta smelt are vulnerable (March-June).]</p>	Please see response to comment 1755-135 regarding comment related to this attachment.
1755	136	<p>Indirect effects:</p> <p>Net or tidally-averaged flow on the lower San Joaquin River at Jersey Point is parameterized as QWEST. This flow can be negative (i.e., eastward), which is considered an indicator of flow conditions unfavorable to fish. Negative QWEST could alter the speed or path of fish migrating through the Delta, thereby prolonging their migrations or making them susceptible to adverse conditions in the Delta. No field estimates of indirect effects have</p>	For more information regarding operational criteria see Master Response 28 and for more information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.

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		<p>been made and they are conceptually difficult because the biological effects are difficult to define and because the net flows in the lower San Joaquin River are small compared to tidal flows. Nevertheless, regulatory agencies, particularly the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Service (NMFS), have long expressed concern that negative values of QWEST due to project operations present fish with impediments to their effective migration.</p> <p>The "east-west flow pattern in the San Joaquin River" referred to in the justification for CM#1 is apparently QWEST. QWEST is calculated in the Dayflow water balance program (<a href="http://www.water.ca.gov/dayflow/">http://www.water.ca.gov/dayflow/</a>) as:</p> $Q_{SJR} + Q_{CSMR} + Q_{MOKE} + Q_{MISC} + Q_{XGEO} - Q_{EXPORTS} - Q_{MISDV} - 0.65 (Q_{GCD} - Q_{PREC}),$ <p>i.e., the sum of inflows from San Joaquin River, eastside streams, and the Sacramento River via the Cross-Delta Channel and Georgiana Slough, minus south Delta exports, miscellaneous diversions in the Delta, and a fraction of the difference between precipitation and consumptive use within the Delta. However, for CALSIM modeling Delta consumptive use (QGCD), Delta precipitation (QPREC), and Delta miscellaneous diversions (QMISDV) are unavailable so the above equation simplifies to:</p> $Q_{WEST} = Q_{SJR} + Q_{MOKE} + Q_{CSMR} + Q_{XGEO} - Q_{EXPORTS}.$ <p>QXGEO increases with Sacramento River flow and also depends on DCC gate operations. Specifically, QXGEO changes as 13.3% of Sacramento River flow with both DCC gates closed and 29.3% with both gates open (Dayflow documentation cited above). Sacramento River flow into the Delta will decrease by the amount diverted in the north Delta. Thus, among the flows controlled under BDCP, QWEST decreases by 100% of south Delta export flows and 13.3% or 29.3% of north Delta diversion flows depending on DCC gate positions.</p> <p>There are many covered species of fish that migrate through or reside in the central Delta (Table 5.2). At least one of these species is present in the Delta during every month but August. Conditions in the central Delta are important for migratory species that spawn in the San Joaquin or Mokelumne Rivers because the entire population must pass through the central Delta. By contrast, only a fraction (unknown) of Sacramento fish enter the central Delta during migration. To cover the species that would be most affected by changes in flows in the San Joaquin River, we limit discussion to outmigrating salmonid juveniles (February-April) and upmigrating San Joaquin salmon (September-November).</p>	
1755	137	<p>Juvenile salmon:</p> <p>The occasional high springtime flow requirements of high outflow scenario (HOS) (to benefit longfin smelt) coincide with the smolt emigration season (February-April). In drier conditions (the drier two quartiles) there is very little difference between No Action Alternative (NAA) and low outflow scenario (LOS) (Figure 5.4). The occasional occurrence of high flow requirements in HOS produce some differences between LOS and HOS scenarios, but mostly in the second quartile when the high flows are more likely to be triggered than in the driest quartile. All project scenarios diverge from the NAA under the wetter scenarios as more water is diverted from the north Delta and substitutes for high south Delta exports (Figure 5.4). The several thousand cfs differences in wetter months are occurring against baseline flows in the realm of 20000 cfs and greater, whereas the changes in flows in drier conditions are very small because limited North Delta diversion operations at low flows do</p>	<p>Under CM1, dual conveyance operations will allow for modifications of the south Delta diversions, and potentially those of the Delta Cross Channel, that will reduce the frequency and magnitude of flows that cause migrating fish to enter the interior Delta. These reductions will, in turn, allow juvenile out-migrants to follow a downstream course into more tidally-influenced portions of the estuary, thereby allowing for more rapid migration and briefer exposure to predation. These modifications to the south Delta diversion will also result in a reduction of the proportion of fish entering the interior Delta, where survival of juvenile Chinook salmon (and presumably other salmonids) is lower (Baker and Morhardt 2001; Brandes and McLain 2001; CALFED Bay-Delta Program 2001; Perry and Skalski 2009; Perry et al. 2010). Reducing the reliance on through-Delta conveyance via the Delta Cross Channel and intakes in the south Delta will also substantially reduce the effects of existing flow anomalies, such as weak flows or reverse flows on salmonids in the San Joaquin River system and tributaries, Mokelumne River, and other eastside tributaries. Although there would be some increased entrainment exposure for Sacramento River salmonids due to the presence of the</p>

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		not affect broad indices of Delta flow such as QWEST.	new north Delta diversions, these effects would be minimized by fish screens, sweeping and approach velocity criteria, and other operational parameters.  For more information regarding operational criteria see Master Response 28 and for more information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.
1755	138	[ATT 3: ATT21:  Table 5.2. Species of fish covered by BDCP that occur within the Central Delta for specific life history stages and the season of sensitivity to changes in flow conditions due to project operations (from various sources).]	Please see response to comment 1755-136 regarding comment related to this attachment.
1755	139	[ATT 3: ATT22:  Figure 5.4. Graph of Feb-April QWEST flow for NAA and 3 alternative operational scenarios, grouped by quartiles of outflow. Two outliers for each scenario in Quartile 4, with values of 52,000-98,000 cfs, were cut off to allow better resolution of the lower values.]	Please see response to comment 1755-136 regarding comment related to this attachment.
1755	140	Adult San Joaquin fall-run salmon  Upmigrating salmon adults to the San Joaquin River pass through the south Delta and the lower San Joaquin River during September-November. In the fall there is very little difference among the alternatives that is not dwarfed by occasional high inflows due to flood releases or early winter storms (Figure 5.5). However, all alternatives show a general increase in QWEST compared to values for No Action Alternative (NAA) because the use of the North Delta Diversion is much less restricted and can more often substitute for south Delta diversions that are often operating at maximum flow under NAA.  In summary, project scenarios have small effects on QWEST in any season; changes in QWEST are smaller than those in Old and Middle Rivers (OMR) because use of the North Delta diversion does not translate into direct increases in flow, as it can for OMR. This is true for both the spring and fall. The high flows in HOS produce increases in QWEST in months around median wetness.]	Operation of the north Delta intakes is expected to reduce reliance on through-Delta conveyance via the Delta Cross Channel and diversions in the south Delta. As such, this will reduce the occurrence and magnitude of flow changes driven by the south Delta diversions on salmonids and sturgeon in the San Joaquin River system and tributaries, Mokelumne River, and other east-side tributaries. Such artificial flow patterns are thought to confuse the upstream migration cues of adults, thereby reducing the probability that they will enter the eastside tributaries or minimizing delay in migration.  For more information regarding operational criteria see Master Response 28 and for more information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.
1755	141	[ATT 3: ATT23:  Figure 5.5. Graph of QWEST flows for the September-November season grouped by quartile of outflow. One outlier for each scenario in Quartile 4, with values of 22,000-30,000 cfs, was cut off to allow better resolution of the lower values.]	Please see response to comment 1755-140 regarding comment related to this attachment.
1755	142	Chapter 6: Estimated Effects of BDCP Flows on Smelt  Introduction:  This chapter takes the model projections for three scenarios discussed in Chapter 5 (NAA--No Action Alternative, HOS--high outflow scenario, and LOS--low outflow scenario) and uses various simple statistical models to estimate the potential effects of these flows on delta and longfin smelt. The principal flows of interest are:  * Winter and spring flows in Old and Middle Rivers, which affect adult and larval to juvenile delta smelt, respectively	The preferred alternative includes a suite of initial operating criteria to meet the purpose and need as defined in the EIR/EIS. These are the criteria that will be used to govern operations of the project. Additionally, the Adaptive Management Program and the ability to make real time adjustments will allow project operations to maximize water supply and minimize impacts to fish. The models used to assess the operational effects represent the best available information.

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		<p>* Fall outflow, which may influence extent of habitat and therefore subsequent recruitment of delta smelt</p> <p>* Spring outflow, which has a statistical relationship with subsequent abundance of young-of-the-year longfin smelt</p> <p>We did not consider export effects on longfin smelt, for which there is no available statistical model and therefore no method to estimate losses without additional analysis beyond the scope of this review.</p> <p>In making the calculations presented here we were constrained to use the CALSIM model output for the various flows by month and year. The concerns expressed in Chapter 5 apply here: we do not believe that the system will actually be operated to obtain monthly patterns of flow like those in the CALSIM output. This is particularly true in January and October, when wild swings in flows from one year to the next indicate a situation that would be very unlikely in the real system.</p> <p>Direct Losses of Delta Smelt:</p> <p>Flows in Old and Middle Rivers are related to salvage of delta smelt and other fish at the south Delta fish facilities. Annual salvage in turn is generally assumed to be a small fraction of entrainment losses, particularly for young (small) fish, because of various other losses attributed to export pumping, including predation in the waterways leading to the facilities and inefficient capture of delta smelt by the facilities.</p> <p>Here we present estimates of export entrainment losses as a fraction of the population of delta smelt during the adult stage and the larval to early juvenile stage, only a small fraction of which is salvaged (Kimmerer 2008). The calculations were based on results of Kimmerer (2008) as amended for adult delta smelt by Kimmerer (2011). The general procedure was to determine a relationship for each of these two life stages between survival and flow variables that were available from CALSIM. Flows used were Old and Middle River flow (OMR) for adults, and net inflow (i.e., inflow less north Delta diversion flow, NDD) and export flow in the south Delta for larvae and juveniles combined.</p> <p>We modeled the entire period of CALSIM analysis (WY 1922-2003) for the BDCP scenarios, and the historical period (1955-2003) for comparison. We calculated losses as described in Appendix C for the BDCP scenarios for both time periods, and for the historical period using Dayflow variables and OMR flows from U.S. Geological Survey monitoring.</p> <p>The principal assumptions were:</p> <ul style="list-style-type: none"> <li>* The relationships used to calculate survival or recruitment accurately reflected the corresponding population parameters; that is, the confidence intervals of the predictions were assumed to include the true values of the population parameters with 95% probability. Note that these analyses (Kimmerer 2008, 2011) have not been repeated by any analysts, although Miller (2011) provided a detailed critique. This is rather worrisome, because both the BiOP and several published modeling studies rely on the accuracy of those analyses (Maunder and Deriso 2011, Rose et al. 2013a, b).</li> <li>* Changes due to BDCP actions were cumulative such that each factor could be examined in isolation from the others, and its effect considered separately from the others.</li> </ul>	

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		<p>* The only changes considered were those due to the entrainment effects of flow.</p> <p>Long-term changes in sea level, tidal prism, temperature, salinity, and physical configuration of the Delta were neglected, despite their likely influence on the exposure of the smelt population to export entrainment. Exceptions to this were the influences of these factors on flows modeled by CALSIM.</p> <p>* The flow time-series produced by CALSIM accurately reflected the influence of the various changes (but note concerns expressed above and in previous chapters).</p> <p>* The broad spatial distributions of delta smelt will not differ substantially from those existing when the above analyses were made. This may not be true if the fraction of the population in the north Delta is higher now and in the future than when the analyses were made (Miller 2011, Kimmerer 2011).</p> <p>Losses of adult delta smelt were calculated as a linear function of OMR flows. Annual percent loss under each of the three scenarios was similar for the historical and modeled time periods (Figure 6.1). The estimated proportion of adults lost to entrainment was slightly lower for the NAA than for the historical period, reflecting overall lower export flows presumably because some operating rules were not in force during the historical period. The High- and Low-Outflow scenarios (HOS and LOS) both had proportional losses that were ~ half of those under the NAA, or a net change in loss of about 3%/year.</p> <p>Losses of larval + juvenile smelt were modeled as a function of exports from the south Delta and inflow to the Delta less diversions from the North Delta facility. The patterns for young smelt were somewhat similar to those for adults but with larger differences among scenarios. The NAA had substantially lower losses than the historical condition over the historical period (Figure 6.2). Flows projected for both the HOS and LOS resulted in much lower losses than for the NAA, with losses under the HOS reduced to ~2%/year on average.</p> <p>We combined results for adults and larvae + juveniles within each calendar year by first calculating the proportion of the population that would remain after 20 years at the mean values in Figures 6.1 and 6.2, then multiplying the proportions remaining to get the influence of these scenarios over both life stages. This is effectively a long-term survival percentage. These are not predictions, and are useful only for examining differences among scenarios. The resulting percentages were 38% for the HOS, 23% for the LOS, and 2% for the NAA (Table 6.1). In other words, the two scenarios with a north Delta diversion resulted in 19- and 11-fold increases in survival over a 20-year period.</p> <p>These numbers are highly uncertain, since the value for NAA is so small and variable (Table 6.1). There are indications that losses have been overestimated, especially given the potentially large subpopulation of young delta smelt that may be resident in the Cache Slough complex, where they are immune from effects of export pumping in the south Delta (Miller 2011). Using the upper confidence limits of the projected population size at the end of 20 years (i.e., the lower 95% confidence limits of the loss estimates) the ratios of population remaining after 20 years would have been 14 for HOS and 9 for LOS. These confidence limits do not account for any upward bias in loss estimates, and the loss estimates can and should be refined to reflect current understanding.</p> <p>Nevertheless, the results of this analysis show a substantial improvement in long-term survival of delta smelt under HOS and to a lesser extent LOS, provided the water projects are operated in ways that result in flows similar to those in the simulation. Taken at face</p>	

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		value the mean difference in losses between NAA and either of the other scenarios would have roughly sufficed to reverse the decline in delta smelt during the early 2000s.	
1755	143	[ATT 3: ATT24:  Figure 6.1. Graph of annual percentage of adult delta smelt lost to export pumping for three scenarios and the historical time series. Symbols give means (see text) and error bars give the 95% confidence limit calculated as quantiles of the 1000 simulated samples of the respective distributions. Top panel, percent annual loss for 1922-2003 (filled symbols) and for 1980-2003 (open symbols) including the historical data. Bottom panel, differences between pairs of model scenarios.]	Please see response to comment 1755-142 regarding comment related to this attachment.
1755	144	[ATT 3: ATT25:  Figure 6.2. Graph of annual percentage of juvenile delta smelt lost to export pumping for three scenarios and the historical time series. Symbols give means (see text) and error bars give the 95% confidence limit calculated as quantiles of the 1000 simulated samples of the respective distributions. Top panel, percent annual loss for 1922-2003 (filled symbols) and for 1980-2003 (open symbols) including the historical data. Bottom panel, differences between pairs of model scenarios.]	Please see response to comment 1755-142 regarding comment related to this attachment.
1755	145	[ATT 3: ATT26:  Table 6.1. Percent of delta smelt population remaining for each of three BDCP scenarios after 20 years of losses at the rates estimated and shown in Figures 1 and 2. Values given with 95% confidence intervals.]	Please see response to comment 1755-142 regarding comment related to this attachment.
1755	146	Outflow Effects:  Two time periods are considered for effects of changed outflow: fall for delta smelt and spring for longfin smelt. These effects are typically cast in terms of X2. For this analysis we calculated X2 from outflow as determined by CALSIM, using the monthly relationship in Jassby et al. (1995), as has been done for all previous analyses of relationships of X2 to abundance indices or habitat of fish (e.g., Feyrer et al. 2007, Kimmerer et al. 2009). CALSIM also produces X2 but it is for the previous month and is somewhat different from that used previously, particularly since it is said to account for sea-level rise and the effects of additional tidal prism due to marsh restoration. Since we were focused on the early long-term (ELT), we elected for now to neglect these considerations and use an X2 value that reflected the anticipated outflows in the same way as in the analyses of X2 effects on fish.	The commenter describes methodology used to analyze the CALSIM II model output. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.  However, for information on modeling used for the proposed project, please see Master Response 30.
1755	147	Fall X2 Effects on Delta Smelt:  The U.S. Fish and Wildlife Service Biological Opinion (BiOp) for delta smelt proposes to use X2 in the September-December period as a management tool. The principal basis for this action is the analyses of fall habitat indices (Feyrer et al. 2007, 2011) and an unpublished analysis relating the Summer Townt index to the previous fall Midwater Trawl index and X2:  $\text{TNS sub}(y+1) \sim a + b\text{MWT sub}(y) + c\text{X2 sub}(y) + \epsilon \text{ sub}(y) \quad (\text{Eqn. 6.1})$  where TNS is the summer townt index, MWT the fall midwater trawl index, y is year, ε is	The analysis presented represents an alternative approach to the analysis used in the BDCP public draft, which focused on the fall abiotic habitat index (see Appendix 5.C, sections 5C.4.5.2 and 5C.5.4.5.1). The results of this analysis are consistent with the analysis from the BDCP public draft and reflect the fact that the NAA (i.e., EBC2_ELT) and HOS (i.e., HOS_ELT) scenarios both include the fall X2 action from the USFWS BiOp, whereas the LOS scenario (i.e., LOS_ELT) does not. Regarding the comment “This peculiar pattern arose from the patterns of outflow in the CALSIM output (see Chapter 5). We have very low confidence that these patterns reflect how the system would really be operated”, please see Master Response 28 on operational criteria.

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		<p>error, a, b, and c are fitted parameters, and the time frame was restricted to after 1987 to account for the changes in the foodweb resulting from the introduction of the clam <i>Potamocorbula amurensis</i> (See Chapter 7 regarding food limitation of delta smelt).</p> <p>This model assumes that the main effect of fall X2 on delta smelt is through a combination of survival and growth and therefore population reproduction in the following spring, resulting in effects on abundance in the following summer. Equation 6.1 is somewhat illogical in modeling TNS as an additive function of MWT and X2, and it is also strongly influenced by the data point from 1998, the wettest fall among those included in the analysis. Removing that point weakens that relationship somewhat, although it remains strong. Nevertheless, we fitted an alternative model:</p> $\log(\text{TNS sub}(y+1)) \sim a + b \log(\text{MWT sub}(y)) + cX2 \text{ sub}(y) + \epsilon \text{ ub}(y) \quad (\text{Eqn. 6.2})$ <p>which is more in keeping with the form of the other X2 models (Jassby et al. 1995). This model was fitted to all the data since 1987 using a robust regression method to allow for some over-dispersion in the residuals (function rlm, Venables and Ripley 2003). The regression coefficients were a=2.7, b= 0.62 ± 0.22, and c= 0.061 ± 0.55, R<sup>2</sup>=0.68, and diagnostic plots revealed that this model was appropriate for the data (Figure 6.3). In particular 1998, and unusually wet year, did not have a strong influence on this relationship.</p> <p>We extrapolated from this model to the BDCP scenarios using the CALSIM-modeled outflows. The target was the summer townet index, which we examined as a ratio to that predicted under No Action Alternative (NAA). In contrast to earlier analyses, we did not attempt to relate this to long-term population growth.</p> <p>The modeled monthly outflow values were converted to X2 according to the monthly equation in Jassby et al. (1995), with the initial value (October 1921) set to the equilibrium X2 for the modeled flow. This was combined with historical monthly mean X2 values and all were averaged over September-December. Equation 6.2 was then used to predict the summer townet index from the mean fall midwater trawl index from 1988 to 2011 and X2 for the three scenarios.</p> <p>Results showed high outflow scenario (HOS) to have, on average, a slightly higher summer townet index than under NAA (Figure 6.4). The ratio of townet indices determined under HOS to that under NAA was 1.02, i.e., a 2% greater index under HOS, with 10th and 90th percentiles of 0.89 and 1.10 respectively. About a third of the values had lower confidence limits below zero, indicating low confidence that a real increase would be achieved under these conditions.</p> <p>By contrast, the predicted ratio of townet index for LOS:NAA was about the same as that for HOS:NAA about half of 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. The calculated ratio had a median of 0.98 with 10th and 90th percentiles of 0.60 and 1.10. This peculiar pattern arose from the patterns of outflow in the CALSIM output (see Chapter 5). We have very low confidence that these patterns reflect how the system would really be operated, and therefore suggest these results be considered as conditional on proposed operational rules.</p>	
1755	148	<p>[ATT 3: ATT27: Figure 6.3. Graph of fitted and measured summer townet index (TNS) with a 1:1 line. Values</p>	Please see response to comment 1755-147 regarding comment related to this attachment.

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		were fitted using Equation 6.2.]	
1755	149	<p>[ATT 3: ATT28:</p> <p>Figure 6.4. Graphs of ratios of predicted TNS index by year from HOS (top) and LOS (bottom) to those from NAA.]</p>	Please see response to comment 1755-147 regarding comment related to this attachment.
1755	150	<p>Spring Outflow/X2 Effects on Longfin Smelt:</p> <p>Longfin smelt has the strongest relationship of abundance index to X2 of any fish (Jassby et al. 1995). The index for a given level of X2 has declined, but the response to flow has not changed. We updated the latest published version of this relationship (Kimmerer et al. 2009) by adding two step changes in time: one in 1987-1988 corresponding to the spread of the clam <i>Potamocorbula amurensis</i>, and the other in 2003-2004, the Pelagic Organism Decline (POD) (Thomson et al. 2010). The statistical model used was</p> $\log_{10}(\text{LFS sub}(y)) = a \text{ sub}(y) + bX2 \text{ sub}(y) + \epsilon \text{ sub}(y) \quad (\text{Eqn. 6.3})$ <p>Where LFS is the annual index of longfin smelt abundance from the fall midwater trawl survey, y is year, X2 is monthly values averaged over either January-June (as in Jassby et al. 1995) or March-May, and <math>\epsilon</math> is error. Fitting parameters are a, which takes one of three values by year group, and b, the slope of the X2 relationship.</p> <p>The resulting relationship (Figure 6.5) shows both the effect of X2 and the two step- changes in abundance index. Diagnostic statistics showed that the model was appropriate. Since we were interested in the difference between the two alternative flow scenarios and NAA, the only parameter that concerned us here was b, which had a value of <math>-0.054 \pm 0.005 \text{ km}^{-1}</math>, essentially identical to previously published values. Averaging X2 over March-May gave a slope of <math>-0.049 \pm 0.005 \text{ km}^{-1}</math>, and the fit was slightly inferior to that of the January-June model.</p> <p>The months selected in the original analysis were based on the assumption that the (unknown) X2 mechanism operated during early life history of longfin smelt, which smelt experts linked to this period. Autocorrelation in the X2 values through months means that statistical analysis provides little guidance for improving the selection of months. A better understanding of the mechanism(s) underlying the relationship would probably allow this period to be narrowed and focused, but for now there is little basis for selecting a narrower period for averaging X2.</p> <p>The predictions from the above model were then applied to the X2 values calculated from the CALSIM projections of outflow for the 82-year period. We did not attempt to propagate prediction error because it is small compared to variability in outflow. Applying the January-June value for the three selected scenarios resulted in scant differences in predicted abundance indices (Figure 6.6). The median <math>\log_{10}</math> ratio of indices for HOS:NAA was 1.00 (mean 1.05) with 10th and 90th percentiles of 0.91 and 1.27. Corresponding values for LOS:NAA were median 0.92 (mean 0.92) and percentiles of 0.83 and 1.00.</p> <p>Thus, changes in outflow resulting from the CALSIM projections of spring outflow were small, particularly on the scale of the high variability with X2. HOS provided a minuscule increase in the mean but the median did not change from NAA, indicating that half of the years had higher, and half lower, values under HOS than under NAA. LOS gave values that</p>	<p>The analysis in the commenter's attachment is an alternative calculation to that included in the BDCP public draft (see sections 5C.4.5.1 and 5C.5.4.5.2), based on similar data, although with slightly different regression terms and X2 calculated from outflow as opposed to using the CalSim estimate of outflow from the previous month. Both analysis methods gave similar results: the mean fall midwater trawl abundance index under the HOS (i.e., HOS_ELT) scenario was 5% greater than the mean abundance index under the NAA (i.e., NAA_ELT) scenario (compared to a mean ratio of abundance indices of 1.05, i.e., 5% greater under HOS, for the analysis in the commenter's attachment), whereas the public draft BDCP showed a 5% lower mean abundance index under LOS (i.e., LOS_ELT) than NAA (compared to a mean ratio of abundance indices of 0.92, i.e., 8% less under LOS, for the analysis in the commenter's attachment). The public draft BDCP focused on the estimated changes in the LLT, for which the mean abundance index under HOS (i.e., HOS_LL) was 12% greater than under NAA (i.e., NAA_LL); this was concluded to be a low positive change (see section 5.5.2.1.1 in Chapter 5 of the public draft BDCP).</p>

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		<p>were ~8% lower than those under NAA.</p> <p>Although it would be desirable to link such calculations to a population-dynamics model, no such model is available; furthermore, previous analyses have shown that abundance of longfin smelt is highly predictable from X2 and, more recently, groups of years as done above. This does not mean that stock-recruit relationships are unimportant; an alternative analysis models a recruitment index, the log of the ratio of the fall midwater trawl index (MWT) to the MWT value 2 years earlier, as a function of X2 (Nobriga and Rosenfield, in prep.). However, it is unlikely this analysis would indicate a stronger effect of X2 on longfin smelt under BDCP.</p>	
1755	151	<p>[ATT 3: ATT 29:</p> <p>Figure 6.5. Graph of abundance index of longfin smelt vs. X2 averaged over January-June, with step changes between 1987 and 1988 and between 2002 and 2003. Colors of points and lines indicate the time period.]</p>	Please see response to comment 1755-150 regarding comment related to this attachment.
1755	152	<p>[ATT 3: ATT30:</p> <p>Figure 6.6. Graph of predicted abundance from the model in Figure 6.3 for the three BDCP scenarios. The intercept for the third time period (2003-2012) was used to calculate these indices.]</p>	Please see response to comment 1755-147 regarding comment related to this attachment.
1755	153	<p>Chapter 7: Likely Response of Listed Fishes to Physical Habitat Restoration</p> <p>Introduction:</p> <p>This Chapter focuses on the proposed restoration of physical habitat in the Delta and Suisun Marsh. Because of time constraints we have focused on the potential benefits of floodplain and marsh restoration to delta and longfin smelt. These benefits are postulated to occur through expanded physical habitat for the fish, or through export of food from the restored areas to smelt habitat.</p> <p>Summary of Assessment:</p> <p>The BDCP proposes to restore 55,000 acres of subtidal to intertidal habitat [Footnote 7-1: "Habitat" means the location and conditions in which a population of a species lives; here we follow the BDCP document in using the term to mean a physical space. We likewise use "restore" to mean to prepare that space for the potential occupation of one or more species, irrespective of the previous condition of the space.] of which 20,600 acres is to be allocated among various Restoration Opportunity Areas (ROAs) in the Delta and Suisun Marsh and the remainder to be allocated later. If completed this restoration will substantially increase the inundated portion of the Plan Area; for example if all 7000 acres assigned to Suisun Marsh were restored it would roughly triple the area exposed to tidal action.</p> <p>The ROA's include Suisun Marsh, Cache Slough, and the eastern, southern, and western Delta. The documentation is unclear on the depth profiles of these areas and for calculations below we have assumed that about half of each will be intertidal and the remainder subtidal with a mean depth of 2 meters. The document lists the aquatic and terrestrial species expected to benefit from these actions, but here we focus only on their</p>	<p>As already mentioned the preferred alternative is now Alternative 4A and no longer includes an HCP.</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).</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. .</p> <p>Proposition 1 funds and other state and public dollars will be directed exclusively for public benefits unassociated with any regulatory compliance responsibilities.</p> <p>Additional priority restoration projects will be identified through regional and locally-led planning processes facilitated by the Delta Conservancy. Plans will be completed for the Cache Slough, West Delta, Cosumnes, and South Delta. Planning for the Suisun Marsh region is already complete and a process for integrated planning in the Yolo Bypass is underway. The Delta Conservancy will lead the implementation of identified restoration projects, in collaboration with local governments and with a priority on using public lands in the Delta.</p>

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		<p>likely effects on the two smelt species.</p> <p>Our results to date lead to the following preliminary conclusions:</p> <ul style="list-style-type: none"> <li>* Delta and longfin smelt are usually food-limited, meaning that population levels would rise if there were more zooplankton in their rearing areas. This limitation is probably stronger in spring-fall than in winter.</li> <li>* The BDCP is overly optimistic about the likely benefits of tidal marsh restoration to the smelt species, particularly the extent of food production.</li> <li>* A review of the literature suggests that tidal marshes may either import or export phytoplankton and zooplankton.</li> <li>* Under highly favorable assumptions about production and export of plankton, restored tidal marshes could make at most a modest contribution to extant plankton production.</li> <li>* The subpopulation of delta smelt that inhabit the Cache Slough complex through summer may benefit from additional physical space in that area. The same could be true in Suisun Marsh although current use by smelts is low.</li> <li>* The high level of uncertainty about outcomes points to the use of moderate- to large-scale experimental restoration projects to determine whether the proposed restoration will achieve the food-production goals and, if so, how to design them optimally.</li> </ul>	
1755	154	<p>The BDCP anticipates many benefits to delta and longfin smelt. Although the documentation is unclear on the expected magnitudes of these benefits, it is uniformly optimistic that they will contribute substantially to recovery of the species. Here we focus on two potential benefits to the smelts from the restoration of tidal habitats. First, the restored habitats are expected to provide a food supply that will enhance the food supply available to the smelts. Second, the restored habitats are expected to provide additional physical space, resulting in an increase in smelt abundance. Neither of these proposed benefits is well developed in the documentation, and the literature cited seems to have been selected to support the claims made. The BDCP documentation furthermore contains factual errors and misinterpretations that cast doubt upon the projections that are made, however qualitative. We therefore conducted a reasonably thorough analysis of these specific claims, within the constraints of time available.</p> <p>The first outcome requires two conditions: 1) that the smelt populations are currently food-limited, meaning that an increase in concentration of food organisms would result in a higher abundance of smelt; and 2) that the restored marshes will produce and export enough food organisms to make a difference to the population status of the smelts.</p> <p>BDCP Appendix 5E uses "prod-acres" 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>Please see response to comment 1755-153 regarding habitat restoration. The lead agencies' 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. In addition to the added water management flexibility created by new water diversions and operational scenarios, the project would improve habitat, increase food supplies and reduce the effects of other stressors on the Delta ecosystem.</p> <p>Alternative 4A does not have the same contribution to recovery commitment as the BDCP. The analysis of Alternative 4A effects on Delta smelt are presented in Chapter 11 of the Final EIR/EIS.</p>

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		<p>The smelt species are expected to occupy some of the restored habitats. This may provide benefits in the form of increased opportunities for individual fish to find suitable conditions such as spawning substrate, food patches, or shelter from predators. A potential benefit is to diversify the locations in which the smelt species occur, in an attempt to increase resilience of the populations to local perturbations such as high-temperature periods or toxic spills.</p>	
1755	155	<p>Analysis of components:</p> <p>For effects of food production and export we assessed the evidence for food limitation of the smelt populations, and for the amount of food (zooplankton) that restored marshes would export to waters where the smelt species occur. For physical habitat we examined current patterns of occurrence to determine the likely effect of additional physical habitat on the smelt species.</p> <p>We do not address other potential indirect impacts of marsh restoration, or interactions with other proposed projects. Restoration of extensive areas of marsh will increase the tidal prism in the restored area. This will affect tidal currents and elevations both locally and all the way to Carquinez Strait, and therefore affect salinity penetration and the movement of sediments. The effects on salinity have been included in the modeling presented in BDCP documents, but we did not review this. The U.S. Army Corps of Engineers has proposed a project, now on hold, to deepen the Sacramento Deep-Water Ship Channel, which is currently an important part of the habitat of delta smelt. This and other non-BDCP projects should be taken into account when considering impacts of BDCP.</p>	<p>Chapter 11 of the Final EIR/EIS addresses the indirect and cumulative effects of the project on aquatic resources. Also see Master Response 17 on biological resources. Please see response to comment 1755-153 regarding habitat restoration.</p>
1755	156	<p>Are smelt species food-limited?</p> <p>What is the evidence for and against food limitation in delta and longfin smelt? By food limitation we mean a situation in which an increase in concentration of food organisms would result in a higher abundance of smelt. This does not require that all or even most fish have depressed growth or reproductive rates, only that at least some of them do. Substantial food limitation would require the following to be true:</p> <ol style="list-style-type: none"> <li>1. The density of food organisms is too low to support the maximum growth rate of the fish.</li> <li>2. Therefore some fish are in poorer condition or grow more slowly than under food satiation.</li> <li>3. Either or both of the following: <ol style="list-style-type: none"> <li>a. Survival over a life stage depends on condition and therefore food supply</li> <li>b. Reproductive rate of an adult varies with growth rate during development through its effect on maturity or total eggs per female.</li> </ol> </li> <li>4. Higher reproduction leads to a larger population, all else being equal. We assume this condition must be true as a straightforward consequence of population dynamics.</li> </ol> <p>Food limitation could occur at one or more life stages, which may occupy different parts of the estuary. During spawning and early life delta smelt are mostly in freshwater. During the late larval stage (~July) until the pre-spawning migration in December, part of the population is in the low-salinity zone (LSZ, salinity ~0.5-5), and part is in the Cache Slough-Liberty Island complex in the North Delta (Sommer et al. 2011). Longfin smelt also</p>	<p>The commenter provides a summary of information on food limitation. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>spawn in freshwater but move earlier and further seaward (Rosenfield and Baxter 2007, Kimmerer et al. 2009). We refer to fish between metamorphosis from the larval stage to their spawning migration as juveniles (i.e., including all fish caught in the fall midwater trawl survey). Both smelt species consume available plankton in their habitat, with the size of prey related to that of the fish.</p> <p>Food limitation is surprisingly difficult to demonstrate in a fish population. Nearly all populations must be food limited to some degree. However, food limitation of individual fish can be difficult to detect. The prey and the fish are spatially patchy and temporally variable, so the degree of food limitation is sporadic and patchy. Great differences among individuals in feeding success result in differences in growth and survival, such that the survivors are those that have been well fed. Feeding success also interacts with other influences such as predation risk and physiological stress.</p> <p>The analysis of food limitation relies on a variety of direct and indirect evidence (Details in Appendix D). Some studies suggest food limitation inferred from correlations of abundance or length with measures of food availability, indices of gut fullness and physiological condition of field-caught smelt, and laboratory-derived estimates of feeding rate in relation to food concentration. A few other studies do not support food limitation in these species. However, the weight of evidence suggests that food is limiting the populations of both smelt species.</p>	
1755	157	<p>Export of food from shallow restored areas:</p> <p>One purported benefit to smelts of restored shallow areas is that elevated food production in these areas will be exported as a subsidy to open waters where the smelts are abundant. The implicit conceptual model is that these shallow areas will produce an excess of phytoplankton and zooplankton that will then be exported by stream flow or tidal currents. A subsidy of phytoplankton could stimulate zooplankton production in the open waters, since the zooplankton in this estuary are chronically food-limited in their growth or reproduction (Müller-Solger et al. 2002, Kimmerer et al. 2005). However, grazing by clams is likely to prevent such a subsidy from having much effect on zooplankton production. The alternative subsidy is that of zooplankton grown within the restored areas, including larger forms such as mysids that are consumed by juvenile longfin smelt and adult delta smelt.</p> <p>The magnitude of any subsidy depends also on the transport process. Where the transport is mediated by tidally-driven currents, the subsidy will be related to the tidal exchange and the difference in biomass between the restored area and the open water. Where it is mediated by river flow, the subsidy will depend on the net flow and the biomass in the restored area.</p> <p>Here we examine the literature on subsidies from marshes, use a simple model to estimate the magnitude of such a subsidy of either phytoplankton or zooplankton, and estimate the proportional flux from the Suisun Marsh to Suisun Bay using output from a particle-tracking model as a measure of the extant subsidy. Our conclusions are:</p> <ul style="list-style-type: none"> <li>* The literature does not support a confident assertion that marshes will subsidize zooplankton of the open waters.</li> <li>* Calculated subsidies of phytoplankton and zooplankton are modest under optimistic assumptions about in-marsh production and design of restoration sites.</li> </ul>	<p>The commenter provides a summary of information related to restoration of shallow areas. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>* A subsidy of zooplankton from Suisun Marsh to Grizzly Bay cannot be very large under current conditions, and is unlikely to be much larger with the proposed extent of restoration.</p>	
1755	158	<p>Do shallow areas export phytoplankton or zooplankton?</p> <p>Marshes can be major producers of organic matter because of their extensive vegetated surface exposed to sunlight, shallow waters leading to light penetration through all or most of the water column, and the continual supply of nutrients from the open waters and from land (Figure 7.1). This appears to be true even for recently restored marshes (Howe and Simenstad 2011). Over the long term, mass must balance, so production in excess of respiration by organisms within the marsh must be either buried or exported as organic matter or organisms to adjacent estuarine waters.</p> <p>Export of organic matter from marshes to adjacent estuarine waters was first considered as the "outwelling hypothesis" (Odum 1980, Nixon 1980). This hypothesis holds that the export of labile organic matter provides an important subsidy to nourish adjacent waters of the estuary or continental shelf.</p> <p>The outwelling hypothesis originated in studies of extensive, rich marshes on the east and Gulf coasts, but even there, quantitative demonstrations of its importance to estuarine or coastal foodwebs were few (Dame et al. 1986). Much of the difficulty arises from the technical challenge of measuring a small net flux in a large tidal signal with high variability (Dame et al. 1986). In addition, dissolved and particulate organic matter produced by rooted vegetation can be highly refractory and therefore largely unavailable to estuarine pelagic foodwebs, which are usually fueled mainly by phytoplankton (Sobczak et al. 2002, 2005).</p> <p>Marshes can be sites of high productivity by benthic or planktonic microalgae because they are shallow, so waters are well-lit. Therefore a marsh could export organic matter as living phytoplankton. However, the extent of this export depends on consumption within the marsh, including consumption of phytoplankton by benthic grazers in shallow waters, as illustrated for flooded islands in the Delta by Lopez et al. (2006). Often overlooked in attempts at a mass-balance of phytoplankton is the high rate of consumption by microzooplankton, which typically consume about 60% of the production by phytoplankton in estuaries (Calbet and Landry 2004, York et al. 2011). Thus, the production actually available for consumption by mesozooplankton, and for export, is considerably lower than would be expected from estimates of primary production.</p> <p>For zooplankton the magnitude and direction of the flux depends on behavior and on size- and taxon-specific patterns of mortality. In particular, visual predation by fish can exert strong control on the size distributions, and therefore species distributions, of zooplankton (Brooks and Dodson 1965). Vertical movements of zooplankton and hatching or settlement of larvae can lead to spatial patterns of abundance that do not reflect tidal transport (Houser and Allen 1996). Consumption of zooplankton by small fish that seek food and shelter in shallow areas can reduce zooplankton abundance near shore, and shift the size distribution toward smaller forms, in lakes (Bruce et al. 2005, 2010), lagoons (Badosa et al. 2007), and marshes (Cooper et al. 2012). The outcome can be net fluxes into shallow areas (Carlson 1978, Kimmerer and McKinnon 1989), and marshes can be simultaneously sinks for copepods and areas of aggregation for bottom-oriented larvae (Mazumder et al. 2009).</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</p>	<p>The commenter provides a summary of available information related to the export of phytoplankton and zooplankton. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.</p>

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		<p>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). If the excess organic matter is being transported by fish as in some east coast marshes (Kneib 1997), little benefit would accrue to planktivorous fish in the open waters such as the smelts.</p> <p>Few of these aspects have been examined in marshes of the San Francisco Estuary. Long-term studies of Suisun Marsh have revealed a lot about fish assemblages (e.g., Matern et al. 2002, Feyrer et al. 2003) and medusae and some zooplankton (Wintzer et al. 2011, Meek et al. 2013), and some detailed studies of exchange processes have been undertaken (Culbertson et al.2004). Zooplankton abundance is highest in small sloughs of long residence time (P. Moyle, UC Davis, personal communication).</p> <p>Foodwebs in diverse marshes of the San Francisco Estuary are supported more by local plant production than by estuarine phytoplankton (Howe and Simenstad 2007, 2011). This implies a division of organic-matter sources between those supporting littoral and marsh foodwebs and those supporting pelagic foodwebs (Grimaldo et al. 2009).</p> <p>Lehman et al. (2010) estimated the fluxes of various substances in and out of Liberty Island, a flooded island in the Cache Slough complex in the northern Delta. They found large seasonal shifts in the magnitude and direction of fluxes. In particular, seasonal chlorophyll flux was into Liberty Island in spring and out in fall, based on point measurements, and into the island in all seasons but more so in spring and summer, based on the continuous measurements. Fluxes of copepods were out during spring and fall, and in during summer, based on a total of six sampling days. Although Lehman et al. (2010) linked fluxes into Liberty Island with storage within the island, it was equally likely to have been a function of consumption, particularly since high inward fluxes of chlorophyll and zooplankton occurred in summer when biological activity would have been high.</p> <p>A few other marshes and restoration sites in the estuary have been investigated for their potential links to open waters. The South Bay Salt Ponds, which began to be reconnected to the tidal action of the Bay in 2006, are highly productive and may export organic matter to nearby estuarine waters (Thebault et al. 2008). A marsh at China Camp in San Pablo Bay was a net sink for mysids, probably through predation within the marsh (Dean et al. 2005).</p>	
1755	159	<p>[ATT 3: ATT31:</p> <p>Figure 7.1. Conceptual model of the production of food for pelagic fish in a low-order tidal marsh channel. Because the water is shallow (and may be clearer than in adjacent channels) light penetration is good and growth of phytoplankton and benthic microalgae is high. Losses of phytoplankton occur through benthic grazing and by pelagic grazing, chiefly by microzooplankton but also by larger zooplankton such as copepods that can be consumed by fish. Benthic grazers filter a certain volume of water every day, so the shallower the water the more intensive the grazing on the plankton of the marsh. Small planktivorous fish such as Mississippi silversides seek shelter in the shallowest and vegetated areas; thus consumption of zooplankton is also more focused and more selective for larger organisms in shallow water. Tidal exchange of water with the adjacent higher-order (larger) channel transports nutrients, organic matter, and plankton between marsh and channel, but the direction of transport for zooplankton may be in or out of the marsh depending on the</p>	Please see response to comment 1755-158 regarding comment related to this attachment.

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		outcomes of the various production and consumption processes.]	
1755	160	<p>Calculated subsidies:</p> <p>Here we assume that the restored areas will actually produce an excess of phytoplankton or zooplankton over adjacent waters, and ask what additional level of food availability to the smelt would result. This is based on a very simple model using data from the Interagency Ecological Program (IEP) monitoring, described in detail in Appendix E (See Figure 7.2). The basis of this model is to calculate the subsidy based on high levels of biomass and growth rate in a 2500-acre marsh that is closely connected to smelt habitat and has an optimum rate of exchange with the open water. We assume smelt habitat is represented by the Low-Salinity Zone (LSZ), which has a volume of about 0.5 km.</p> <p>A subsidy is maximized by a large marsh close to the smelt habitat, with tidal exchange close to but not above the net population growth rate of the plankton (Figure 7.3). The subsidy is degraded or even reversed by consumption (clams, planktivorous fish) within the marsh. Water depth may have a positive or negative effect on the subsidy.</p> <p>The simple model in Appendix E shows that under an extremely favorable set of conditions both within and outside of the marsh, a modest subsidy of phytoplankton is possible.</p> <p>Phytoplankton input to the LSZ could amount to 16%/day, or about half of the daily net production in the LSZ. However, smelt species do not eat phytoplankton, and the conversion of phytoplankton to zooplankton depends on factors in the open water such as grazing. The direct subsidy of zooplankton would be about 3%/day, also under unrealistically ideal conditions. Although this is not negligible, any reduction in this value would effectively eliminate the subsidy to open water.</p>	<p>The commenter highlights the uncertainty associated with food export from restored areas.. Please see response to comment 1755-153 regarding habitat restoration.</p>
1755	161	<p>[ATT 3: ATT32:</p> <p>Figure 7.2. Schematic diagram of a subsidy of zooplankton (yellow circles) from a restored tidal marsh or other shallow area to an existing estuarine area. Zooplankton move by dispersion (double-sided arrows) between the restored and existing areas, and within the existing area from the outlet of the restored area to other regions of the estuary including smelt habitat. Advection may alter the flow of zooplankton, for example, if the restored area is on a creek that produces a net flow into the existing area.]</p>	<p>Please see response to comment 1755-160 regarding comment related to this attachment.</p>
1755	162	<p>Zooplankton export from Suisun Marsh:</p> <p>One of the proposed restoration areas is in the northern end of Suisun Marsh. We estimated the subsidy of copepods to the low-salinity zone (LSZ) from this region using Interagency Ecological Program (IEP) monitoring data and using a particle-tracking model to estimate exchange rate (Appendix E). If the copepods behaved as passive particles, this subsidy would amount to about 2%/d of the population in the LSZ. This is unlikely to produce a noticeable increase in copepod biomass, as their potential population growth rates are on the order of 10%/d. However, particles that migrate to the bottom tidally or remain near the bottom, as most zooplankton do in the estuary (Kimmerer et al. 2002), were essentially trapped within the northern marsh. Behavioral responses to tidal currents, consumption within the marsh, the distance from the mouth of the marsh to the habitat of the smelts, and the operations of the salinity control gate on Montezuma Slough would all reduce or even eliminate this subsidy.</p>	<p>The commenter highlights the uncertainty in the efficacy of habitat restoration that is discussed in the public draft BDCP. Please also see response to comment 1755-153.</p>

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		<p>The real world:</p> <p>Several features of the actual restoration site would alter the subsidy to open waters from the analyses above. First, the enlarged restoration area will alter the tidal prism and therefore the exchange rate. The proposed restoration for Suisun Marsh would increase the inundated area 2-3-fold, with a corresponding increase in tidal currents. Since most of the exchange will be mediated by tides, this could substantially increase the exchange rate. Whether this would increase or decrease the subsidy would depend on the net population growth rate achieved in the marsh in relation to the exchange rate. Resolving the change in residence time would require a 3D model with very accurate bathymetry throughout the region. It is impossible to tell with available information whether the stronger tidal connections would result in a greater subsidy from Suisun Marsh, or whether this would be offset by zooplankton behavior or by consumption within the marsh. Such calculations could be done using a hydrodynamic and particle tracking model and some reasonable assumptions about zooplankton behavior.</p> <p>The BDCP documents acknowledge (but then mostly ignore) that grazing by clams that settle in or near restored subtidal areas may remove all or most of the phytoplankton production and some of the zooplankton. Grazing by clams and zooplankton (including microzooplankton) removed all of the phytoplankton production in the LSZ nearly all the time from late spring through fall during 1988-2008 (Kimmerer and Thompson submitted.). Whether clams settle in the newly restored areas is critical in determining whether the area can export any phytoplankton (Lucas and Thompson 2012). At present clams are not abundant in Suisun Marsh except for the larger Suisun and Montezuma Sloughs, where they probably remove a substantial fraction of the phytoplankton and small zooplankton that would otherwise enter Grizzly Bay.</p> <p>Zooplankton organisms are not passive, and undergo tidal migrations in Suisun Bay (Kimmerer et al. 1998, 2002). It is very likely that they will do so also in marsh channels, which would greatly lengthen the residence time for copepods produced in the marsh, particularly in the far northern area of Suisun Marsh. In addition, several studies have shown that zooplankton organisms may also be consumed by various planktivorous fish within a marsh, resulting in a net flux of zooplankton into the marsh (see literature review above).</p> <p>Finally, some of the proposed restoration sites are far from the centers of distribution of delta and longfin smelt. Travel times from these sites to where the fish are may be on the order of weeks to months in the dry season or when the North Delta diversions are operating (Kimmerer and Nobriga 2008). A plankton population can double or halve its biomass in a few days depending on local food supply and predation. Thus, any export of zooplankton from a restored area should be assumed to subsidize only the local area.</p> <p>All of these considerations are based on rather crude models of exchange and population processes. That is appropriate given the level of specificity of the BDCP design.</p> <p>Nevertheless, this analysis raises significant questions about the putative subsidy from restored areas to estuarine foodwebs. To address this uncertainty, long before any actual restoration takes place a program of analysis, modeling, and experimental restoration should be undertaken.</p>	
1755	163	Likely use of restored areas:	The commenter provides a summary of available information. Monitoring would assess the presence of smelts in restored areas, which as the commenter notes, is uncertain to occur in some areas, but seems

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		<p>Like other fish, smelt use a variety of habitats and appear to explore their environment to find suitable places for spawning, growth, and development. As pelagic fish, their principal habitat is open waters of the estuary, either in freshwater during the larval to early juvenile stages in spring to early summer, or in the low-salinity zone until winter. The low-salinity zone during summer-fall is generally in the western Delta and Suisun Bay, including the channels of Suisun Marsh. Delta smelt appear to be surface-oriented, which would allow them access to shallow areas (Aasen 1999).</p> <p>The fundamental problem for both smelt species in the open-water, brackish regions of the estuary is the low food supply (discussed above) and possibly also the decreasing turbidity (Kimmerer 2004). Those trends may be difficult to reverse, spelling trouble ahead for the smelts. However, in recent years some proportion of the delta smelt population has remained in freshwater in the Cache Slough complex, despite high temperature there (Sommer and Mejia 2013). This may provide an alternative habitat in which the smelt population can either avoid poor conditions in the low-salinity zone (LSZ), or hedge its bets on future conditions. Longfin smelt are apparently not very abundant in Cache Slough.</p> <p>Delta and longfin smelt have been collected in the Suisun Marsh fish survey (Matern et al. 2002). Delta smelt are not common in Suisun Marsh during summer-fall but were formerly common in winter to early spring (Matern et al. 2002) when the fish are migrating and spawning. About 0.7% of 3291 otter trawl samples from the Suisun Marsh survey during May-October of 1982-2009 and about 3% of 3320 samples during November-April contained delta smelt, mostly maturing juveniles and adults. The low catches in summer were not due to small size of the fish, since young-of-the-year longfin smelt of the same size range were captured frequently in that program. Temperature in the larger sloughs is ~1°C higher than in Grizzly Bay in July and August, based on Interagency Ecological Program (IEP) and University of California at Davis monitoring data, but if smelt avoid the warmer water in summer it does not explain the low catches for all of May-October. Longfin smelt are much more abundant in the Suisun Marsh channels than delta smelt, occurring in 8% of samples in May-October and 12% of samples in November-April with no obvious differences among the various sloughs.</p> <p>The 20mm survey catches smelts during spring-summer in Montezuma Slough in Suisun Marsh and in central Suisun Bay including one station in Grizzly Bay near the major western entrance to the marsh. A graphical comparison of catch per trawl in these locations did not reveal a consistent difference for either species. A similar comparison of catch per trawl between Montezuma Slough and Grizzly Bay in the Fall Midwater Trawl survey also did not reveal a consistent difference, except that delta smelt were somewhat less abundant in the slough than in Grizzly Bay during September. Thus, it appears delta and longfin smelt are roughly as abundant in the larger sloughs of Suisun Marsh as in the open water of the estuary.</p> <p>The key question for this aspect of restoration is whether additional physical habitat would result in larger populations of smelt. Abundance of delta smelt is related to an index of habitat availability based on salinity and turbidity (Feyrer et al. 2007, 2011, Nobriga et al. 2008). However, the size of the LSZ (volume or area) does not seem to be strongly related to the abundance of either smelt species (Kimmerer et al. 2009, in press). This may be because the LSZ is a contiguous stretch of water whose physical features are ephemeral, and the fish can move around readily within that region. In contrast, shallow tidal areas may offer enough physical structure to provide a wealth of sub-habitats with variable conditions. In that case, having more habitat area could lead to a greater abundance of fish. Note that a</p>	<p>more likely in others. Please also see response to comment 1755-153.</p>

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		<p>relationship between the quantity of habitat and the size of a fish population need not rely on a density-dependent relationship between habitat and the survival or reproduction of individual fish, which seems unlikely for delta smelt at current population levels.</p> <p>Thus, we are cautiously optimistic that restoration of habitat may result in colonization and subsequent population expansion of delta smelt in the Cache Slough area including the Sacramento Ship Channel (Moyle 2008, Sommer and Mejia 2013). Longfin smelt seem unlikely to benefit from this. We cannot determine whether either species would benefit from similar restoration in the Suisun Marsh or the western Delta. The other restoration sites are too remote from the current population centers to offer much reason for optimism about their colonization by either smelt species.</p>	
1755	164	<p>Floodplain:</p> <p>The BDCP proposes to alter the Fremont Weir at the upstream end of the Yolo Bypass so that the Bypass would flood at lower stages of the Sacramento River. We consider here only the likely effects on the smelt species.</p> <p>Review of conceptual basis:</p> <p>Although the smelt species do not use floodplain as habitat, elevated production of plankton on the floodplain may provide a subsidy to smelt habitat. This situation differs slightly from that of the potential subsidy from marshes discussed above. First, the floodplain is a flow-through system so that increased biomass of plankton will be transported by the mean, river-derived flow rather than by tidal flow. Second, residence time on a floodplain varies with flow conditions, from hours to a few days under high-flow conditions to effectively infinite in ponds remaining after the floodplain stops draining.</p> <p>Analysis of components:</p> <p>Apart from its suitability as habitat for fish and other species, the Yolo Bypass may also support foodwebs within the estuary. The mechanism for this would be higher phytoplankton and zooplankton production because of shallow depth and better light penetration than in river channels, as well as higher temperature (Lehman et al. 2007). Whether this translates to zooplankton is uncertain; zooplankton abundance on the Bypass was similar to that in the Sacramento River during 1998-2001 (Sommer et al. 2004). Plankton biomass on a floodplain may increase late in the season as residence time increases and fish switch to larger prey (Grozholtz and Gallo 2006), but that was not observed on the Yolo Bypass in most years (Sommer et al. 2004).</p> <p>At very high flows residence time on the Bypass is probably too short to allow for a buildup of biomass, while at lower flows such a buildup may occur but the rate of export may be low (Schemel et al. 2004). This implies that, as with tidal exchange in marshes (Figure 7.3), there is an intermediate range of flow that maximizes export of plankton.</p> <p>A subsidy from the Yolo Bypass may be more or less direct to delta smelt habitat, notably in the Cache Slough complex at the southern end of the Bypass. In addition, it may subsidize the low-salinity habitat used by both smelt species in late spring through fall.</p> <p>In Appendix F we examine the evidence for a subsidy of zooplankton to the open water of the estuary under the current configuration using existing zooplankton data. We do not actually calculate the magnitude of the subsidy, since several factors would intervene to</p>	<p>The commenter provides a summary of information. Please see response to Letter 1755-153 for background on the change in the proposed project. Alternative 4A does not include Yolo Bypass improvements (CM2).</p>

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		<p>alter conditions. In particular, the Bypass could be flooded later in the year than is now the case, and the greater light penetration and higher temperature would provide for greater plankton production than now occurs. Furthermore, Bypass flow would represent a greater proportion of total inflow to the Delta later in the year, resulting in less dilution of the plankton coming off the Bypass.</p> <p>Our analysis shows no evidence that the open waters of the estuary receive a detectable subsidy of phytoplankton or zooplankton. If anything, plankton abundance is inversely related to Yolo Bypass flow, either during the month of sampling between flow during the winter and zooplankton abundance in the following summer.</p>	
1755	165	<p>[ATT 3: ATT33:</p> <p>Figure 7.3. Relative magnitude of phytoplankton flux from a tidal marsh as a function of exchange rate, scaled to the growth rate of the phytoplankton. The model is based on a balance among import of nutrients to the marsh, uptake of nutrients to support growth of phytoplankton, and export of phytoplankton. All nutrient uptake is by phytoplankton, there is no consumption, and the phytoplankton concentration in the receiving water is zero.]</p>	Please see response to comment 1755-164 regarding comment related to this attachment.
1755	166	<p>Chapter 8: Regulatory Oversight and Assurances</p> <p>Regulatory Oversight:</p> <p>Introduction:</p> <p>The draft BDCP vests primary responsibility for implementing the Plan in a Program Manager, who shall "ensure that the BDCP is properly implemented throughout the duration of the Plan" (BDCP 7-2). The Program Manager's authority is broad and includes protection and restoration of habitat, reduction of ecological stressors, management of conserved habitat, coordinated operation of the CVP and SWP, and development of the new facilities authorized by the Plan (BDCP 7-3). [Footnote 8-1: The Program Manager also will have responsibility over the Implementation Office, which will assist the Program Manager in all aspects of implementation of the Plan, BDCP 7-4 to 7-5, and the Science Manager and Adaptive Management Team as described in Chapter 9 of this report.]</p> <p>The Program Manager's implementation of the BDCP is subject to oversight by the Authorized Entity Group, which will be comprised of the Director of the California Department of Water Resources as operator of the SWP, the Regional Director of the U.S. Bureau of Reclamation as operator of the CVP, and one representative each of the CVP and SWP contractors if the contractors are issued permits under the Plan (BDCP 7-8). [Footnote 8-2: A question has arisen whether the fish and wildlife agencies legally may grant incidental take permits to the CVP and SWP contractors under the federal Endangered Species Act and the California Natural Community Conservation Planning Act. We address this question in the Appendix G.]</p> <p>The BDCP also covers certain diversions of water that are not part of CVP or SWP operations and recognizes that these water supply operators may seek incidental take permits under the terms and conditions of the BDCP. If this occurs, these water projects would become Authorized Entities, but would not be members of the Authorized Entity Group (BDCP 7-8).</p>	The commenter summarizes information from the 2013 public draft BDCP. There is no comment to respond to. Please see Master Response 5 regarding the adequacy of the governance structure proposed for the 2013 public draft BDCP.

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		<p>The Authorized Entity Group's authority over the BDCP also is broad and multifaceted. The draft BDCP states:</p> <p>"The Authorized Entity Group will provide oversight and direction to the Program Manager on matters concerning the implementation of the BDCP, provide input and guidance on general policy and program-related matters, monitor and assess the effectiveness of the Implementation Office in implementing the Plan, and foster and maintain collaborative and constructive relationships with the State and federal fish and wildlife agencies, other public agencies, stakeholders and other interested parties, and local government throughout the implementation of the BDCP" (BDCP 7-8 to 7-9).</p> <p>This oversight structure means that the Authorized Entity Group will exercise significant authority over both the coordinated operation of the CVP and SWP and implementation of the BDCP itself. Indeed, the draft Plan declares that the Program Manager "will report to the Authorized Entity Group, and act in accordance with the group's direction" (BDCP 7-2).</p>	
1755	167	<p>The draft Plan vests regulatory responsibility within the BDCP in a "Permit Oversight Group," which is composed of the Regional Director of the U.S. Fish and Wildlife Service, the Regional Administrator of the National Marine Fisheries Service, and the Director of the California Department of Fish and Wildlife (BDCP 7-11). It then states that the three agencies "are expected to issue regulatory authorizations to the Authorized Entities" pursuant to the federal Endangered Species Act and the California Natural Community Conservation Planning Act (BDCP 7-11).</p> <p>The draft Plan also provides that, "[c]onsistent with their authorities under these laws, the fish and wildlife agencies will retain responsibility for monitoring compliance with the BDCP, approving certain implementation actions, and enforcing the provisions of their respective regulatory authorizations" (BDCP 7-11). This means that, although the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Wildlife will work together as members of the Permit Oversight Group for the purpose of supervising implementation of the BDCP, each agency will retain its independent regulatory powers over the CVP, SWP, and other water users under the federal and state Endangered Species Acts. [Footnote 8-3: This independent regulatory authority is subject, however, to an important caveat -- the draft Plan's requirement of consistency between future section 7 consultations and the BDCP -- as described below. See pp. 7-8 to 7-9.]</p> <p>This structure is consonant with both the Endangered Species Acts and the California Natural Community Conservation Planning Act, because it separates the regulatory oversight responsibilities of the federal and state fish and wildlife agencies from the operational responsibilities of the Program Manager and the Authorized Entity Group. This structural delineation is undermined, however, by the draft Plan's more detailed definition of the "function" of the Permit Oversight Group, which blurs the distinction between implementation and regulation. It also is undermined by provisions in the draft Plan that grant the Authorized Entity Group -- rather than the regulatory agencies -- veto authority over changes to the conservation measures, biological objectives, and adaptive management strategies, as well as over amendments to the BDCP itself.</p>	<p>As described in the 2013 public draft BDCP in Chapter 7 and summarized in Table 7-1, the fish and wildlife agencies have the final authority regarding adaptive management decisions on conservation measures or biological objectives, contrary to the comment. The veto ability of the Authorized Entity Group regarding plan amendments relates to whether to propose an amendment. Plan amendments must be initiated by HCP/NCCP permittees, not the regulatory agencies. The decision of whether to approve or deny a plan amendment, once submitted, rests with the regulatory agencies. As noted in Table 7-1, the Permit Oversight Group has the final authority to make a decision regarding a plan amendment.</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>A biological opinion is not required prior to the release of the Draft BDCP/CWF EIR/EIS. For the Proposed Action, the USFWS and NMFS will conduct an internal ESA section 7 consultation prior to issuance of an Section 10(a)(1)(B) permit for the Proposed Action. These federal agencies will coordinate the ESA consultation process and other environmental review processes, such as the National Environmental Policy Act (NEPA), consistent with federal regulations. In addition, the USFWS and NMFS will consult with the United States Bureau of Reclamation (Reclamation) to complete biological opinions or a joint biological opinion prior to federal action to carry out the proposed project.</p> <p>For more information please see 1.1.5.2 of Section 1 Introduction of the RDEIR/SDEIS.</p> <p>For more information on compliance with the Endangered Species Act please see Master Response 29. For information on adaptive management, please see Master Response 33.</p>
1755	168	<p>Regulatory vs. Programmatic Responsibilities: Implementation:</p> <p>The draft Plan grants the Permit Oversight Group a significant role in implementing the</p>	<p>The comment is noted regarding the recommended changes for the structure of the governance and decision-making process proposed in the 2013 public draft BDCP. Please also see Master Response 5 regarding the adequacy of the governance structure.</p>

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		<p>conservation goals and adaptive management strategies of the BDCP:</p> <p>The Permit Oversight Group will be involved in certain decisions relating to the implementation of water operations and other conservation measures, actions proposed through the adaptive management program or in response to changed circumstances, approaches to monitoring and scientific research (BDCP 7-11).</p> <p>It then provides that the Permit Oversight Group "will have the following roles, among others, in implementation matters":</p> <ul style="list-style-type: none"> <li>* Approve, jointly with the Authorized Entity Group, changes to conservation measures or biological objectives proposed by the Adaptive Management Team.</li> <li>* Decide, jointly with the Authorized Entity Group, all other adaptive management matters for which concurrence has not been reached by the Adaptive Management Team.</li> <li>* Provide input into the selection of the Program Manager and the Science Manager.</li> <li>* Provide input and concur with the consistency of specified sections of the Annual Work Plan and Budget with the BDCP and with certain agency decisions.</li> <li>* Provide input and concur with the consistency of the Annual Delta Water Operations Plan with the BDCP.</li> <li>* Provide input and accept Annual Reports.</li> <li>* Provide input and approve plan amendments [Footnote 8-4: The draft Plan also contains a placeholder "function," which states that the Permit Oversight Group also may play a role in "decision-making regarding real-time operations, consistent with the criteria of CM1 Water Facilities and Operation and other limitations set out in the BDCP and annual Delta water operations plans." As the details of this role as still under negotiation, we do not address it here except to note that the role of the Permit Oversight Group should be clearly defined and limited to regulatory oversight as explained in the text.] (BDCP 7-11 to 7-12: emphasis added).</li> </ul> <p>These definitions are poorly drafted, and they assign programmatic authority to the fish and wildlife agencies that may undermine their regulatory responsibilities. We therefore recommend that the draft BDCP be revised in two ways:</p> <p>First, where the parties to the negotiations want to grant the Permit Oversight Group authority to determine whether certain actions or documents are consistent with the BDCP, the Plan should define its responsibilities more clearly and precisely than does the current language -- e.g., "provide input and concur"; "provide input and accept"; and "provide input and approve." Thus, the draft Plan should be revised to state:</p> <p>"The Permit Oversight Group shall have exclusive authority to determine whether the Annual Work Plan Budget and Annual Delta Operations Plan are consistent with the BDCP. If the Permit Oversight Group does not issue a determination of consistency, the document in question shall be revised and resubmitted to the Permit Oversight Group for approval or further remission and revision."</p> <p>Second, the Permit Oversight Group's role should be limited to regulatory oversight. The "functions" listed in the draft Plan conflate the Permit Oversight Group's regulatory</p>	<p>For information on adaptive management please see Master Response 33.</p>

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		<p>responsibilities with the programmatic implementation duties that are best left with the Program Manager and the Authorized Entities Group. Although there is some practical value in collaboration among the regulators and the regulated -- e.g., having the fish and wildlife agencies give their "input" during the drafting of annual operations plans -- it is better policy to maintain the exclusive regulatory role of the Permit Oversight Group. A regulatory agency that has a stake in the creation of the program and policy decisions that it must ultimately review will not be able to bring its independent judgment to bear in evaluating those same decisions for consistency with the Plan and other applicable laws.</p> <p>The conflation of regulatory and programmatic responsibilities is especially dangerous in the case of revisions to the biological objectives, conservation measures, and other adaptive management strategies. As currently written, the draft Plan grants the Authorized Entity Group an effective veto over proposed changes to the these programs, even if the Adaptive Management Team, the Science Manager, the Program Manager, and the Permit Oversight Group have concluded that changes are needed to ensure programmatic compliance with the BDCP or to fulfill the requirements of the federal and state Endangered Species Acts (BDCP 7-11).</p> <p>A better course would be to revise the draft Plan to allow the Science Manager and Adaptive Management Team -- subject to oversight and approval from the Program Manager and Authorized Entity Group -- to make revisions to the biological objectives, conservation measures, and other adaptive management strategies. These changes then would be submitted to the Permit Oversight Group for review and approval or remission. The Permit Oversight Group also should have independent authority to revise the biological objectives, conservation measures, and other adaptive management strategies if it concludes that the existing programs are inadequate to comply with the BDCP or other governing law.</p>	
1755	169	<p>Regulatory vs. Programmatic Responsibilities: Policy Modifications and Amendments to the BDCP:</p> <p>A similar problem exists for modifications to the BDCP itself. The draft Plan recognizes that "Plan modifications may be needed periodically to clarify provisions or correct unanticipated inconsistencies in the documents" (BDCP 6-45). It then identifies three types of plan modifications: administrative changes, minor modifications, and formal amendments. Only the latter two concern us here.</p> <p>The draft Plan defines "minor modifications" as including transfers of acreage between Restoration Opportunity Areas or conservation zones and "[a]djustments of conservation measures or biological objectives . . . consistent with the monitoring and adaptive management program and intended to enhance benefits to covered species" (BDCP 6-46). It then describes "formal amendments" as including, but not limited to:</p> <ul style="list-style-type: none"> <li>* Changes to the geographic boundary of the BDCP.</li> <li>* Additions of species to the covered species list.</li> <li>* Increases in the allowable take limits of covered activities or the addition of new covered activities to the Plan.</li> <li>* Substantial changes in implementation schedules that will have significant adverse</li> </ul>	<p>The commenter's concerns are noted. Please see Master Response 5 regarding the adequacy of the governance structure for the BDCP.</p>

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		<p>effects on the covered species.</p> <p>* Changes in water operations beyond those described under CM1 Water Facilities and Operations. (BDCP 6-47).</p> <p>The "minor modifications" and "formal amendments" thus include all aspects of BDCP implementation that will be vital to the success or failure of the BDCP. Yet, the draft Plan expressly provides that the Authorized Entities may veto any such changes. [Footnote 8-5: Please note that the draft BDCP states that the Authorized Entities -- not the Authorized Entity Group -- hold this veto power. This may be a typographical error, as the Authorized Entities are not granted implementation decisionmaking authority (except through the Authorized Entity Group) any other place in the document. If it the BDCP negotiators in fact intend to vest veto authority in the Authorized Entities, however, this is especially problematic as the Authorized Entities potentially include water users other than those that comprise the Authorized Entity Group. BDCP 7-8.] For minor modifications, the draft BDCP states: "If any Authorized Entity disagrees with the proposed minor modification or revision for any reason, the minor modification or revision will not be incorporated into the BDCP" (BDCP 6-46). [Footnote 8-6: By contrast, if any of the fish and wildlife regulatory agencies disagrees with a proposed minor modification, its rights are limited to insisting that the proposal be treated as a formal amendment to the Plan. BDCP 6-46.] The draft Plan similarly declares that formal amendments "will be subject to review and approval by the Implementation Office and the Authorized Entities." [Footnote 8-7: At least in the case of formal amendments the draft Plan recognizes a relative parity in the rights of the regulators and the regulated, acknowledging that such amendments "will require corresponding amendment to the authorizations/ permits, in accordance with applicable laws and regulations regarding permit amendments." BDCP 6-47. It also states, however, that the "fish and wildlife agencies will use reasonable efforts to process proposed amendments within 180 days." BDCP 6-46.]</p>	
1755	170	<p>The BDCP is fundamentally a set of terms and conditions that allow the principal regulatory agencies -- the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife -- to authorize the construction and operation of physical improvements to the Delta that will facilitate more reliable (and, one may hope, more environmentally sustainable) exports of water by the CVP and SWP. Although the motivating purpose of the BDCP is to facilitate this water development, the regulatory agencies' foundational responsibility is to ensure that the project does not jeopardize the continued existence of the species that are listed for protection under the federal and state Endangered Species Acts.</p> <p>To accomplish this essential obligation, the fish and wildlife agencies must both insist on an initial set of biological objectives, conservation measures, and conditions on coordinated project operations that will fulfill this purpose; and they must have the means of ensuring that the implementation of the BDCP will continue to achieve that goal throughout its fifty-year term.</p> <p>We do not believe that the draft Plan satisfies this second requirement, as it vests veto authority over necessary changes in the biological objectives, conservation measures, adaptive management strategies, and the terms and conditions of the BDCP itself, not in the regulatory agencies, but in the regulated entities that comprise the Authorized Entity Group. We therefore recommend revision of the draft Plan to require that all "minor modifications" and "formal amendments" to the BDCP be subject to review and approval by the Permit</p>	Please see response to comment 1755-167 and response to comment 1755-168.

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		<p>Oversight Group.</p> <p>As explained above, we also recommend that the draft Plan be revised to authorize the Permit Oversight Group itself to initiate and make changes to the biological objectives, conservation measures, and other adaptive management strategies that the fish and wildlife agencies conclude are needed to ensure the protection and recovery of the species listed under the federal and state Endangered Species Acts. This unilateral authority must extend to all of the identified "minor modifications" and to at least one of the defined "formal amendments" -- viz. "substantial changes in implementation schedules that will have significant adverse effects on the covered species" (BDCP 6-47). [Footnote 8-8: The governance structure set forth in the current draft Plan also may jeopardize the likelihood that the BDCP will be incorporated into the Delta Plan. See California Water Code [Section] 85320-85322. The Delta Reform Act provides:</p> <p>"The BDCP shall include a transparent, real-time operational decisionmaking process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations." [Id. [Section] 85321 (emphasis added)]</p> <p>The Authorized Entity Group's veto authority over changes to the biological objectives, conservation measures, and adaptive management strategies means that the fish and wildlife agencies would not have the power to ensure that the biological measures will be achieved. The draft Plan therefore violates this statutory mandate, and the CDFW and the Delta Stewardship Council consequently would likely be precluded from incorporating the BDCP into the Delta Plan.]</p> <p>The other listed "formal amendments" -- which include alteration of the geographic boundaries of the Plan and the addition of new species and covered activities -- are different, as they include possible changes to the scope and structure of the BDCP, rather than adaptive changes to the implementation and achievement of the goals of the existing BDCP. These formal amendments therefore are properly subject to approval of both the Permit Oversight Group and the Authorized Entity Group. [Footnote 8-9: It is worth noting that even this limited "bilateral" approval process for structural amendments to the BDCP may not be consistent with federal law. The ESA rules provide that all incidental take permits "are issued subject to the condition that the National Marine Fisheries Service reserves the right to amend the provisions of a permit for just cause at any time during its term." 50 C.F.R. [Section] 222.306(c).]</p>	
1755	171	<p>Regulatory assurances and the "No Surprises" policy.</p> <p>Introduction</p> <p>The draft Plan proposes to create two types of "regulatory assurances." First, it seeks to eliminate the uncertainties associated with consultation under Section 7 of the federal Endangered Species Act (ESA) for coordinated CVP and SWP operations, by stipulating that future Biological Opinions (BOs) shall be consistent with the terms and conditions of the BDCP. Second, it offers "No Surprises" guarantees, both for deviations between the BOs and the BDCP, and for future changes to the BDCP itself. In addition, the draft Plan places difficult scientific, legal, and political burdens on the state and federal governments' power to terminate the Incidental Take Permits (ITP) and to rescind the BDCP.</p> <p>In our judgment, these regulatory assurances compound the risks described in the</p>	Please see response to comment 1755-64. Also see response to comment 1755-167.

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		<p>preceding section, because they severely constrain the fish and wildlife agencies' ability to respond to inadequacies in the BOs, Conservation Measures (CM), and other adaptive management strategies -- even apart from the veto authority that the draft Plan vests in the Authorized Entity Group.</p> <p>Section 7 Consultation and the BDCP</p> <p>According to the draft Plan, once the facilities authorized by the BDCP are constructed, the Plan will largely displace the existing Section 7 consultation requirements applicable to coordinated CVP and SWP operations -- "On the basis of the BDCP and the companion biological assessment, it is expected that the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) will issue a new joint Biological Opinion (BiOp) that would supersede BiOps existing at that time as they relate to SWP and CVP actions addressed by the BDCP" (BDCP 4-2). The draft Plan then requires that the new BO (as well as any subsequent BOs issued during the 50-year term of the BDCP) be consistent with the terms and conditions of the BDCP itself.</p> <p>The BDCP is intended to meet the requirements of the ESA and provide the basis for regulatory coverage for a range of activities identified in the Plan. Unless otherwise required by law or regulation, in any Section 7 consultation related to a covered activity or associated federal action and covered species, USFWS and NMFS will each ensure that the resulting BOs are consistent with the integrated BO for the BDCP (BDCP 6-44).</p> <p>We do not necessarily object to this consistency directive. An important goal of the BDCP is to provide all parties -- especially the Authorized Entities -- with a measure of regulatory and operational certainty that will enable them both to invest in the new facilities and to make water management decisions in their respective service areas in reliance on water deliveries from the CVP and SWP. To the extent that future Section 7 consultations conform to the terms of the BDCP, that certainty is enhanced. We also note the first clause of the second sentence quoted above, which expressly reserves the authority of USFWS and NMFS to issue BOs that depart from the terms of the BDCP, if necessary, to comply with the governing law. This law, of course, includes Section 7(a)(2) of the federal ESA, which requires all consulting agencies to ensure that their actions are "not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat" [16 U.S.C. Section 1536(a)(2)].</p> <p>We do believe, however, that the proposal to substitute the BDCP for Section 7 consultation as the principal means of applying the federal ESA to the CVP, SWP, and other Authorized Entities reinforces our recommendations from the preceding section -- viz. that the Permit Oversight Group must maintain the independent regulatory prerogatives that the fish and wildlife agencies currently possess, and must have authority to approve or to deny proposed changes in the BOs, CMs, and other terms and conditions of the BDCP, as required to protect and recover the species covered by the Plan. Our support for the BO/BDCP consistency directive should be read with this caveat.</p>	
1755	172	<p>"No Surprises"</p> <p>The draft Plan contains two "no surprises" guarantees. The first applies to changes in coordinated CVP and SWP operations or water supply capabilities that may be required by future Biological Opinions that do not conform to the BDCP. The second</p>	Please see response to comment 1755-64.

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		<p>is a more general "no surprises" commitment that protects the Authorized Entities from certain changes to the BDCP itself.</p> <p>According to the draft Plan, "Ecological conditions in the Delta are likely to change as a result of future events and circumstances that may occur during the course of the implementation of the BDCP" (BDCP 6-30). The draft then lists seven "Changed Circumstances Related to the BDCP" -- levee failures, flooding, new species listings, wildfire, toxic or hazardous spills, nonnative invasive species, and climate change (BDCP 6-31). For each of these "reasonably foreseeable" changes, the draft Plan describes the "planned responses" that BDCP administrators will undertake (BDCP 6-31 to 6-42). [Footnote 8-10: The Implementation Office is charged with identifying the onset of a changed circumstance, working with the Permit Oversight Group to fashion a response, and for implementing and monitoring the responsive actions (BDCP 6-31). The draft Plan states that the responses "have been designed to be practical and roughly proportional to the impacts of covered activities on covered species and natural communities, yet sufficient to effectively address such events" (BDCP 6-30). The BDCP budget will include funds to cover the costs of implementing some of the planned responses to "reasonably foreseeable" changed circumstances (BDCP 6-30). [Footnote 8-11: This funding process is described in Chapter 8 of the draft BDCP. See BDCP 8-60 to 8-64. The draft states generally that, to "allow for the ability to respond to changed circumstances should they occur, the Implementation Office should maintain a reserve fund for covering costs of changed circumstances" (BDCP 8-61). The draft Plan explains that this is because "the risk of some changed circumstances -- e.g., failure of levees attached to tidal marsh and floodplain restoration -- and cost of remedial measures increases as greater portions of the conservation strategy are implemented." Id.</p> <p>The draft BDCP only includes levee failure and wildfire damage to preserved lands as possible "changed circumstances for which responses are expected to result in additional implementation costs." Id. It omits "changed circumstances related to climate change, flooding, failure of water operations infrastructure, nonnative invasive species, new species listings, and toxic or hazardous spills," explaining that the response costs for these are accounted for in the initial BDCP funding, will be paid by the state and federal governments under the "no surprises" guarantees, or would be the responsibility of a third party. BDCP 8-61 to 8-62.]</p>	
1755	173	<p>The draft Plan also recognizes that "unforeseen circumstances" may require changes to the biological objectives, conservation measures, adaptive management strategies, or the terms and conditions of the BDCP itself. It defines unforeseen circumstances as "changes in circumstances that affect a species or geographic area covered by an HCP that could not reasonably have been anticipated by the plan participants during the development of the conservation plan, and that result in a substantial and adverse change in the status of a covered species" (BDCP 6-42 citing 50 C.F.R. [Section] 17.3 &amp; 50 C.F.R. [Section] 222.102). The draft Plan contains a similar definition of "unforeseen circumstances" under state law. These are "changes affecting one or more species, habitat, natural community, or the geographic area covered by a conservation plan that could not reasonably have been anticipated at the time of plan development, and that result in a substantial adverse change in the status of one or more covered species" (BDCP 6-43 citing California Fish &amp; Game Code [Section] 2805(k)).</p> <p>The draft Plan then sets forth the following regulatory assurances under federal and state law:</p>	<p>The comment summarizes information from the BDCP. There is no comment to respond to.</p> <p>For more information please see response to comment 1755-64. Regarding the Endangered Species Act please see Master Response 29. The implementing agreement is discussed in Master Response 5.</p>

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		<p>"Under ESA regulations, if unforeseen circumstances arise during the life of the BDCP, U.S. Fish and Wildlife Service and/or National Marine Fisheries Service may not require the commitment of additional land or financial compensation, or additional restrictions on the use of land, water, or other natural resources other than those agreed to in the plan, unless the Authorized Entities consent (BDCP 6-42).</p> <p>"In the event of unforeseen circumstances, California Department of Fish and Wildlife will not require additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources without the consent of the plan participants for a period of time specified in the Implementation Agreement (BDCP 6-43)." [Footnote 8-12: The draft Plan notes that, under California law, "such assurances are not applicable in those circumstances in which CDFW determines that the plan is not being implemented in a manner consistent with the substantive terms of the Implementation Agreement." BDCP 6-43 (citing California Fish &amp; Game Code [Section] 2820(f)(2)).]</p> <p>As noted above, for federal agencies that are subject to section 7 consultation (including consultation for coordinated CVP/SWP operations).</p>	
1755	174	<p>The draft Plan contains an additional "no surprises" pledge if new Biological Opinions contain operational or water supply restrictions that differ from those set forth in the BDCP:</p> <p>"Furthermore, U.S. Fish and Wildlife Service and National Marine Fisheries Service will not require additional land, water, or other natural resources, or financial compensation or additional restrictions on the use of land, water, or other natural resources regarding the implementation of covered activities beyond the measures provided for under the BDCP, the Implementing Agreement, the incidental take permits, and the integrated BiOp." (BDCP 6-44)</p> <p>The purpose of these regulatory assurances is to exempt the Authorized Entities from any of the costs of complying with the federal and state Endangered Species Acts except as defined in (and funded pursuant to) the terms of the BDCP. These "no surprises" guarantees therefore may place the financial burden of some future changes to the BDCP and project operations exclusively on state and federal taxpayers.</p> <p>Although both federal Endangered Species Act regulations and the California Natural Community Conservation Planning Act authorize "no surprises" guarantees, we believe, given the uncertainties outlined in the previous chapters, that there is a significant risk that the costs of compensating the projects and their contractors for future "unforeseen" hydrologic, engineering, and operational changes will be excessive. More importantly, we are concerned that the state and federal governments' assumption of liability may deter the fish and wildlife agencies from making changes to future Biological Opinions or to the BDCP itself that the agencies believe are necessary to protect and recover listed species.</p>	<p>The commenter's concerns are noted. For more information please see response to comment 1672-24. Regarding the Endangered Species Act please see Master Response 29.</p>
1755	175	<p>The following example focusing on the "reasonably foreseeable" changed circumstance of climate change illustrates our concerns.</p> <p>The draft Plan defines climate change as "[l]ong-term changes in sea level, watershed hydrology, precipitation, temperature (air or water), or ocean conditions that are of the magnitude or effect assumed for the effects analysis and that adversely affect conservation strategy implementation or covered species are considered a changed circumstance" (BDCP 6-41). It then provides that the "occurrence of this changed circumstance will be determined jointly by the Implementation Office and fish and wildlife agencies" (BDCP</p>	<p>For information on climate change and the proposed project, please see Master Response 19. Also see response to comment 1755-167.</p>

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		<p>6-41). [Footnote 8-13: We reiterate here the problems that we identified in the preceding section: conflation of the fish and wildlife agencies' regulatory and programmatic roles and the granting of an effective veto to the regulated entities through the Implementation Office.]</p> <p>According to the draft Plan, however, alterations in the ecosystem and threats to listed species caused by climate change will not trigger any management or regulatory responses beyond those set forth in the BDCP. "Because the BDCP already anticipates the effects of climate change, no additional actions will be required to remediate climate change effects on covered species and natural communities in the reserve system" (BDCP 6-41). Rather, the Adaptive Management Team will monitor these changes and the Implementation Office will "continually adjust conservation measures to the changing conditions in the Plan Area as part of the adaptive management program" (BDCP 6-42).</p> <p>The draft Plan also states that all responses to climate change "will be made as part of the adaptive management and monitoring program. Measures beyond those contemplated by the adaptive management and monitoring program are not likely to be necessary because the conservation strategy was designed to anticipate a reasonable worst-case scenario of climate change. A change in conservation measures in response to climate change beyond that considered in Chapter 3, Conservation Strategy, and through the adaptive management and monitoring program is considered an unforeseen circumstance." (BDCP 6-42: emphasis added).</p>	
1755	176	<p>There are two serious problems with this changed circumstances strategy:</p> <p>First, although the "biological goals and objectives [of the BDCP] have been established at the landscape level to take climate change into account during conservation strategy implementation," and the "conservation strategy, monitoring and research program, and adaptive management and monitoring program already include responses to anticipate climate change effects at the landscape, natural community, and species scales" (BDCP 6-42), the draft Plan correctly anticipates that the biological objectives, conservation measures, and other adaptive management strategies are likely to be modified over time as required to respond to the changed conditions brought about by climate change. Yet, as described previously, all such modifications are subject to approval by the Authorized Entities (BDCP 6-46). The fish and wildlife agencies consequently lack independent authority to determine the appropriate policy and management responses to climate change, even within the confines of the defined responses set forth in Chapter 3 of the BDCP.</p> <p>Second, changes in conservation measures that differ from the defined responses are "unforeseen circumstances," which trigger the "no surprises" guarantee. Again, while the draft Plan anticipates a broad array of ecological changes likely to be caused by climate change, and lays out a detailed set of programmatic responses, it is folly to believe that the BDCP scientists and negotiators have correctly identified all of the hydrologic changes, biotic responses, and risks to the ecosystem that will in fact occur over time. As one recent interdisciplinary study of California water policy emphasized:</p> <p>"New approaches to ecosystem management under changing conditions will require continued, large-scale experimentation aided by computer modeling. This task is complex, because experiments, especially on a large scale, often yield ambiguous results. Also, as with hydrology, the past is not always a good predictor of the future with many ecosystems. Linking human and natural systems, combined with changes in climate and influxes of alien species, creates novel, dynamic ecosystems with no historical analog. Thus, efforts to</p>	<p>The Lead Agencies acknowledge that uncertainty is inherent in any planning effort of this geographic and temporal scale. However, DWR strived to use the best available science throughout the effects analysis, consistent with the requirements of the ESA. Additionally, the official public review process for the proposed project provides an opportunity for formal public comment on the proposed project and project alternatives. Public and agency comments on the public draft have led to further refinement of the proposed project, as evidenced in the RDEIR/SDEIS.</p> <p>Please see response to comment 1755-175.</p>

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		<p>restore ecosystem functions and attributes involve hitting a moving, only partially visible target. Finally, ecosystem changes are often nonlinear and interrelated. Declines in habitat quality or abundance reduce ecosystem resiliency, with the result that even small changes in conditions can lead to abrupt system collapse and reorganization to a new state. Such thresholds or tipping points are difficult to predict. Taken together, these factors suggest that efforts to improve conditions for California's native aquatic species will necessarily involve trial and error, and that success is far from guaranteed.</p> <p style="text-align: center;">* * *</p> <p>"The difficulty is compounded by the high uncertainty of success for specific actions, given ecosystem complexity, gaps in knowledge of how to manipulate many key processes, and, most important, continuing change in climate, invasive species, and other conditions in California. As a result, a flow regime or water quality target that seems adequate today may not provide the same services in 20 to 30 years. Aiming at a moving target in semi-darkness means that there will be many misses." (From: Hanak et al., 2011: emphasis added).</p> <p>The potential consequences of the "no surprises" guarantee in this context are troubling. Fisheries biologists generally agree that diminished seasonal outflow and warming water temperatures place several listed species at risk of extinction (see Cloern et al., 2011; Moyle et al., 2013). The projects that would be authorized by the BDCP should reduce some of the sources of stress on these species by reducing entrainment and predation and by creating substitute habitat, but they will not address several other important stressors such as diminished summer and fall outflow and rising water temperatures.</p>	
1755	177	<p>Sometime during the 50-year term of the BDCP, it may be necessary to construct additional upriver storage (e.g., by increasing the capacity of Shasta Reservoir) to enable more sustained cold-water releases to protect salmon spawning and out-migration.</p> <p>Yet, under the draft Plan, this action would constitute an "unforeseen circumstance," because it falls outside the defined responses to climate change set forth in the BDCP. The consequence would be that the state and federal taxpayers would have to bear all of the costs of constructing and operating the new or expanded storage, even though the fish and wildlife agencies determined that this action is needed to protect one or more listed species from extinction (while maintaining reservoir releases and exports at the levels and timing authorized by the BDCP).</p> <p>Alternatively, if funding were not available to construct the new storage capacity, and the fish and wildlife agencies made jeopardy findings and issued new Biological Opinions that altered reservoir release requirements in a manner that reduced water supply or export capacity, the state and federal governments would have to compensate the Authorized Entities for the value of the lost water or the cost of replacement supplies. [Footnote 8-14: During the July 23, 2013, meeting with DWR Director Mark Cowin and CDFW Director Chuck Bonham, Director Cowin stated that it was not the parties' intent to apply the "no surprises" policy to actions taken outside the plan area that may be required to address the effects of climate warming or other changed conditions on listed species. Although we were pleased to learn this, we retain the concerns described in the text for two reasons: First, the draft Plan does not state that new infrastructure or operational changes needed to ensure the survival of species covered by the BDCP are exempt from the "no surprises" guarantee if they are located outside the plan area. Rather, the draft links CVP and SWP facilities and water supply operations upstream of the plan area to the conservation measures that may be required to protect covered species and their downstream habitat (BDCP 1-20). Without</p>	<p>Regarding storage and the proposed project please see Master Response 37. For a discussion on compliance with the Endangered Species Act please see Master Response 29. Master Response 33 discusses adaptive management and monitoring for the proposed project. For information on the proposed project's independent utility please see Master Response 8. Also see response to comment 1755-64.</p>

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		<p>an explicit limitation on the "no surprises" guarantee to new, "unforeseen" conservation measures undertaken within the plan area, we believe that there is an unacceptable risk that the Authorized Entities could raise a plausible claim that the "no surprises" policy exempts them from liability for new facilities and operational changes upstream of the plan area that are needed to protect covered species within the plan area.</p> <p>Second, the draft Plan expressly extends the "no surprises" assurance for future section 7 consultations over new facilities and other changes in CVP operations that are outside the plan area and not part of the BDCP covered activities. The draft Plan stipulates that "USFWS and NMFS will further ensure that the terms of any BiOp issued in connection with projects that are independent of the covered activities and associated federal actions do not create or result in any additional obligation, cost, or expense to the Authorized Entities" (BDCP 6-44).</p> <p>If the parties to the BDCP negotiations do not intend for the "no surprises" guarantee to cover new construction and project operational changes outside the plan area, then they should revise the draft Plan to say so explicitly and clearly. We also recommend that the sentence quoted above, which exempts the Authorized Entities from all costs associated with section 7 consultations to project facilities and operations other than BDCP covered activities be deleted.]</p>	
1755	178	<p>We do not believe that the 50-year "no surprises" guarantees are wise or prudent policy. We understand that the Authorized Entities seek to protect their capital investment and obtain maximum security of their water service capabilities, and that a relatively fixed set of biological objectives, conservation measures, and operational constraints help to achieve these goals (BDCP 1-26). But a 50-year commitment is ill-advised in an ecosystem as complex, variable, and scientifically inscrutable as the Delta. As our colleague Peter Moyle has observed, in the Delta Ecosystem, "[o]ver-negotiation of details in advance is unlikely to enable adequate responsiveness and flexibility" and "even the most well-informed, scientifically based management will encounter surprises and make mistakes" (From Moyle et al., 2012).</p> <p>The parties to the BDCP negotiations therefore should consider separate "no surprises" guarantees -- one governing construction of the BDCP projects, and a series of operational "no surprises" commitments that would be reevaluated every ten years based on current information on the appropriateness of the biological objectives, the success or failure of the conservation measures, species survival and recovery, overall ecosystem health, climate change, invasive species, discharges, the effects of authorized project operations, other stressors, and regulatory compliance.</p> <p>We have chosen ten years for the recommended length of renewable "no surprises" assurances because a ten-year period is likely to include a variety of different types of water years and thus will be sufficiently lengthy to enable BDCP managers and regulators to evaluate how well the biological objectives and conservation measures perform across a spectrum of hydrologic conditions. At the same time, ten years is short enough to minimize the risk that the terms and conditions of the BDCP become antiquated and ineffective in light of the inevitable and unpredictable changes to the ecosystem. Indeed, a series of renewable ten-year "no surprises" guarantees could create a constructive incentive for the parties to the BDCP to monitor progress and achievement of the biological objectives and conservation measures and to make adaptive management changes as required to sustain and recover the covered species and their habitat. [Footnote 8-15: There is nothing in</p>	<p>The commenter's concerns are noted. Please see response to comment 1755-64. For information on adaptive management and the proposed project please see Master Response 33.</p>

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		<p>federal or state law that requires that the term of a "no surprises" guarantee be coextensive with the term of the HCP/NCCP. Indeed, the California Natural Communities Conservation Planning Act requires that the duration of all regulatory assurances be based on a careful assessment of the limits of scientific understanding of the covered species and their habitat. California Fish &amp; Game Code [Section] 2820(f) states that the CDFW's "determination of the level of assurances and the time limits specified in the implementation agreement for assurances may be based on localized conditions and shall consider":</p> <p>(A) The level of knowledge of the status of the covered species and natural communities.</p> <p>(B) The adequacy of analysis of the impact of take on covered species.</p> <p>(C) The use of the best available science to make assessments about the impacts of take, the reliability of mitigation strategies, and the appropriateness of monitoring techniques.</p> <p>(D) The appropriateness of the size and duration of the plan with respect to quality and amount of data.</p> <p style="text-align: center;">* * *</p> <p>(H) The size and duration of the plan.]</p>	
1755	179	<p>Revocation of Incidental Take Permits and the BDCP:</p> <p>Many of our concerns about the rigidities of the draft Plan and the scope and length of the regulatory assurances would be lessened if there were an effective means of revoking the incidental take permits and thus rescinding the BDCP. But there is not.</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.</p> <p>Please see Master Response 1755-167.</p>
1755	180	<p>The "Permit Revocation Rule," adopted in 2004, allows the federal fish and wildlife agencies "to nullify regulatory assurances granted under the No Surprises rule and revoke the Section 10 permit only in specified instances, including where continuation of a permitted activity would jeopardize the continued existence of a species covered by an HCP and the impact of the permitted activity on the species has not been remedied in a timely manner" (BDCP 6-48: quoting 69 Fed. Reg. 7172 (Dec. 10, 2004)). The draft Plan states, however, that the "USFWS or NMFS will begin the revocation process only if it is determined that the continuation of a covered activity will appreciably reduce the likelihood of survival and recovery of one or more covered species and that no remedy [other than revocation] can be found and implemented" (BDCP 6-49).</p>	<p>Please see response to comment 1755-179.</p>
1755	181	<p>Under the California Natural Communities Conservation Planning Act, the Department of Fish and Wildlife may revoke the state incidental take permit "if necessary to avoid jeopardizing the continued existence of a listed species" (BDCP 6-49: citing California Fish &amp; Game Code [Section] 2820(c)). [Footnote 8-16: Section 2820(c) actually addresses a more limited violation of the terms of an NCCP, providing for suspension or revocation if a plan participant fails to "maintain the proportionality between take and conservation measures specified in the implementation agreement and does not either cure the default within 45 days or enter into an agreement with the department within 45 days to expeditiously cure the default." California Fish &amp; Game Code [Section] 2820(c). The more general revocation standard is set forth in section 2820(b)(3)(A)-(D) of the Act.] The federal and state fish and wildlife agencies also may revoke the permits if the Authorized Entities fail to fulfill their obligations under the BDCP, but only following the dispute resolution process set forth in</p>	<p>The commenter is summarizing information from the BDCP. There is no information to respond to. For more information please see response to comment 1755-179. For information on the Implementing Agreement, please see Master Response 5.</p>

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		the Implementing Agreement and "providing the Implementation Office and Authorized Entities with a reasonable opportunity to take appropriate responsive action" (BDCP 6-49).	
1755	182	Before the fish and wildlife agencies may revoke the incidental permits, they must follow a variety of procedures and substantive standards. These include determining, in concert with the Implementation Office, "whether changes can be made to the conservation strategy to remedy the situation" and whether "there are additional voluntary implementation actions that the Authorized Entities could undertake to remedy the situation."	The commenter is summarizing information from the BDCP. The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1755	183	<p>The draft Plan also the federal fish and wildlife agencies to determine whether they or some other agencies can take actions to ensure the survival of the listed species, rather than imposing such burdens on the parties to the Authorized Entities:</p> <p>"The USFWS or NMFS will determine whether the fish and wildlife agencies or other state and federal agencies can undertake actions that will remedy the situation. The determination must be based on a thorough review of best available practices considering species population status and the effects of multiple federal and nonfederal actions. It is recognized that the fish and wildlife agencies have available a wide array of authorities and resources that can be used to provide additional protection for the species, as do other state and federal agencies." (BDCP 6-48 &amp; 6-50: emphasis added)</p> <p>The draft Plan thus makes it difficult for the fish and wildlife agencies to revoke the incidental take permits if the biological objectives, conservation measures, and adaptive management changes do not achieve their primary goal of protecting and recovering the listed species. Procedural and substantive rigor is not in and of itself reason to doubt this last line of defense against extinction.</p>	Please see response to comment 1755-167.
1755	184	<p>Two additional facts lead us to the conclusion that permit revocation is not likely to be a credible means of ensuring the survival of the species if the BDCP fails its most essential task.</p> <p>First, neither the federal fish and wildlife agencies nor the California Department of Fish and Wildlife have ever revoked an incidental take permit. Indeed, there is only one case in which a federal incidental take permit has been suspended, and that was for the permittee's violation of the terms and conditions of the habitat conservation plan, rather than because of changes in ecological conditions or the permittee's failure to agree to amendments to the biological objectives and conservation measures. [Footnote 8-17: See U.S. Fish and Wildlife Service Letter to Victor Gonzales, President of WindMar Renewable Energy, Feb. 2, 2012 (decision of partial suspension of incidental take permit).] Revocation of the incidental take permits covered by the BDCP therefore would be an unprecedented event.</p> <p>Second, a decision to revoke the incidental take permits would not be simply a scientific determination that the BDCP -- as written today and implemented at some future date during its 50-year existence -- is not adequate to ensure the conservation and recovery of the listed species. Although the BDCP assigns the authority to revoke the state incidental take permit to the Director of the California Department of Fish and Wildlife (BDCP 6-50), it stipulates that "[a]ny decision to revoke one or both federal permits must be in writing and must be signed by the Secretary of the Interior or the Secretary of Commerce, as the case may warrant" (BDCP 6-49). [Footnote 8-18: This would change the process for permit revocation set forth in the federal ESA rules, which vest revocation authority in the Director of the U.S. Fish and Wildlife Service. 50 C.F.R. [Section] 17.22(b)(7).] In our judgment, this poses an undue risk that the revocation decision would be based on science and political</p>	Please see response to comment 1755-167.

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		<p>considerations. Indeed, there would seem to be no other purpose for elevating the revocation authority from the fish and wildlife agencies to the two Cabinet-level Secretaries.</p> <p>For these reasons, we do not believe that the state and federal authority to revoke the incidental take permits compensates for the deficiencies in the draft BDCP described above.</p>	
1755	185	<p>Governance and Implementation of Adaptive Management:</p> <p>BDCP envisions that its adaptive management program will be organized and run by its Implementation Office. The office will be run by a Program Manager who will be hired by the Authorized Entity Group (AEG). The AEG will be made up of DWR, Reclamation, and the state and federal water contractors. The Program Manager selects and supervises a Science Manager, who takes on the responsibilities of running the adaptive management programs and coordinating, in unspecified ways, all science and monitoring activities.</p> <p>The Science Manager will chair and manage an Adaptive Management Team (AMT) made up of a broad array of regulators, regulated entities, and science programs. These include representatives appointed by members of the AEG, the Permit Oversight Group (POG: California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service), the Interagency Ecological Program (IEP), Delta Science Program (DSP), and NOAA Southwest Fisheries Science Center. This group will receive input from a Technical Facilitation Subgroup, part of a Stakeholder Council made up of multiple of stakeholder groups, regulated entities, and regulating entities.</p> <p>The AMT, led by the Science Manager, will have the responsibility for designing, administering and evaluating the BDCP adaptive management program, including the development of performance measures, monitoring and research plans, synthesis of data, solicitation of independent review, and developing proposals to modify biological goals and objectives as well as conservations measures.</p> <p>The AMT is to operate by consensus only, meaning all members must agree to all actions. Where consensus cannot be reached the matter is elevated to the AEG and POG for resolution. As a matter of course, all changes in conservation measures and biological goals and objectives must be approved by the POG and AEG. The entity responsible for decision-making (for example, NMFS regarding changes in biological goals and objectives for salmon) will decide the issue. However, as discussed in Chapter 8, any member of the AEG or POG may request review of the decision at the highest level of the relevant federal department or state, up to the appropriate department secretary or the Governor of California (BDCP Chapter 7, Section 7.1.7).</p>	<p>Please see Master Response 5 for a discussion of the governance structure proposed in the 2013 public draft BDCP.</p> <p>A detailed description of the Collaborative Science and Adaptive Management Program is included in Chapter 3, Description of Alternatives, of the Final EIR/EIS. For more information on adaptive management and the proposed project, please see Master Response 33.</p>
1755	186	<p>An essential goal of the adaptive management program -- seeking consensus for all decisions from all regulated and regulating entities as well as key providers of science -- is understandable and, if it could be achieved, laudable. However, for several reasons this is unlikely to be successful.</p> <p>First, as discussed in Chapter 8, this structure confuses the roles of regulators and regulated entities. It gives exceptional decision power to regulated entities, particularly those with a great financial stake in outcomes (state and federal water contractors). We are skeptical that difficult, perhaps costly decisions could be achieved in an efficient and effective manner since any member of the Authorized Entity Group or Permit Oversight Group can, in effect, elevate any decision, no matter how trivial, to the highest levels of government. This is likely to have a chilling effect on decision-making, making all parties cautious and</p>	<p>Please see response to comment 1755-185.</p>

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		<p>risk-averse. These traits -- caution and fear of taking risks -- are antithetical to the principles of adaptive management by which all management decisions are viewed as experimental and inherently risky. The most likely outcome from this approach to governance of adaptive management is that preliminary decisions made during the initial phases of the plan are, through sheer inertia, likely to remain permanent, rendering the concept of adaptive management moot.</p> <p>Second, the Adaptive Management Team is made up of a mix of regulators, regulated entities, and scientific providers such as Interagency Ecological Program and Delta Science Program. This places the science providers in the position of being decisionmakers, creating clear conflicts of interest. Most importantly, as discussed below, this eliminates one of the most important aspects of science in support of adaptive management: scientific independence.</p>	
1755	187	<p>Adaptive Capacity:</p> <p>The Adaptive Management Team, with approval from the Permit Oversight Group, Authorized Entity Group or higher federal and state authorities, will oversee implementation of the adaptive management program, presumably through the Science Manager. A central issue likely to arise when finalizing BDCP is the adaptive flexibility available. All such programs have a natural tension between wanting to provide assurances -- such as how much water will be exported from the Delta -- and needing flexibility in amount and timing of exports to test and implement adaptive management programs. The current BDCP documents offer little to no guidance on adaptive capacity. This is likely to play a major role in how adjustments are made in conservation measures and, more importantly, how real-time operations (an element of adaptive management) are implemented. BDCP has sought to defer this decision, both within the document and to its Decision Tree process (discussed below).</p>	<p>Please see response to comment 1755-185. Regarding operational criteria please see Master Response 28. For more information on the BDCP's decision tree process, please see Master Response 44.</p>
1755	188	<p>Science Program:</p> <p>Science should underpin the discussions and information needed to make and implement adaptive management decisions. The extensive literature on adaptive management cites a strong, well-funded, and well-organized science and monitoring program as essential for adaptive management. The BDCP documents do not provide extensive information about science to support adaptive management, other than a solid commitment to build and support a strong science program and, in the EIR/EIS, a significant funding commitment. As currently described, the science program would be run by the Science Manager under the direction of the Program Manager and the Authorized Entity Group. The role of the science manager would be to fund an array of activities, guide synthesis and analysis, and coordinate with the numerous public and private institutions working on the Delta. Beyond this, there are few specifics.</p>	<p>Please see Master Response 33 for a discussion of the adaptive management program. The funding commitment for the adaptive management and monitoring program is described in the 2013 public draft BDCP in Chapter 8. Specifics of the adaptive management and monitoring program are described in the biological goals and objectives in Chapter 3 of the Final EIR/EIS. Alternatives that include BDCP were revised to include more details on the adaptive management and monitoring program in Appendix 11F of the Final EIR/EIS.</p>
1755	189	<p>BDCP's current efforts on science have come in for extensive criticism from several entities, including the National Research Council (2012), the Delta Independent Science Board (Memo to Delta Stewardship Council dated May 20, 2013) and the Public Policy Institute of California (Hanak et al., 2013, Gray et al., 2013). To be fair, the project proponents recognize that the BDCP science program is a work in progress and likely to change before the public draft of the plan is released. However, several significant issues will need to be resolved:</p> <ul style="list-style-type: none"> <li>- Integration: the National Research Council in its review of Delta science was highly critical of the lack of integration of scientific efforts in the Delta. The NRC and others have pointed</li> </ul>	<p>Please see response to comment 1755-185.</p>

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		<p>out that coordination is less effective than integration. BDCP is a once-in-a-generation opportunity to reorganize science in the Delta to make it more integrated and more effective for addressing the major issues of the day. As structured, BDCP builds a new stand-alone science program that seeks to coordinate with other programs, such as Interagency Ecological Program and Delta Science Program, rather than to integrate them. This is unlikely to prove successful.</p> <ul style="list-style-type: none"> <li>- Independence: as noted above, the Adaptive Management Team blurs the distinction among decision-makers, regulated entities, and the providers of science and technical advice. In addition, the BDCP science program is, in effect, run by the regulated entities and lacks independence. This creates the potential for bias in the selection of what science gets funded and what is ultimately made available to the public. Given that most major disputes in the Delta come down to differences of opinion in court about the best available science, demonstrating scientific integrity and transparency should be the highest priority.</li> <li>- Oversight: as currently structured, there is no independent oversight of the BDCP science program. There is a commitment to promoting peer-review of scientific work products and plans. In addition, there is mention of coordinating with the existing DSP and the Delta Independent Science Board. But oversight, which is essential for creating public assurances that the best available science is being utilized in decision-making, is currently absent from the plan.</li> </ul>	
1755	190	<p>Funding: science is expensive, and for a program this large and complex, it is likely to be very expensive. There are no discussions regarding budget in the BDCP plan documents. However, in the administrative draft EIR/EIS there are substantial commitments to funding a science program. There are categories of funding (monitoring, research, etc.), but little information as to how it would be distributed, organized and administered. Still, this level of commitment is significant and necessary.</p>	<p>The budget for BDCP is presented in Chapter 8 of the plan. This cost estimate includes substantial biological monitoring and research to support the adaptive management and monitoring program. For more information regarding funding sources please see Master Response 5.</p>
1755	191	<p>To be effective, during revision of the plan documents, BDCP will have to address the considerable weaknesses in science governance, integration with other programs, independence and transparency, oversight and funding. Notably, there is a parallel process underway, led by the Delta Stewardship Council, to develop a comprehensive plan for science in the Delta. This "One Delta, One Science" effort is essential for the success of BDCP. It seems to us that BDCP's science effort should be fully integrated with the Delta Science Plan, if not led by the Delta Science Program. However, to date, BDCP has had limited involvement with this planning process.</p>	<p>Please see Master Response 33 for a discussion of the adequacy of the adaptive management program. For information on compliance with the Delta Reform act please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS.</p> <p>Additionally, a detailed description of the Collaborative Science and Adaptive Management Program is included in Chapter 3, Description of Alternatives, of the Final EIR/EIS. For more information on adaptive management and the proposed project see Master Response 33.</p>
1755	192	<p>Decision Tree:</p> <p>Earlier chapters of this review note that most controversial decisions, or decisions with high scientific uncertainty, are proposed to be resolved through adaptive management (i.e., deferred). One of the most important decisions will involve initial operations of the dual export facilities approximately ten years after issuance of the HCP/NCCP permit. The operations are to be based on the best available science on how to meet the co-equal goals of ecosystem benefit and water supply, with the goal of meeting the HCP/NCCP conservation standards.</p> <p>A fundamental tension exists between two competing hypotheses regarding BDCP. The first, controlling hypothesis is that better management of existing export volumes with the dual facility, coupled with significant investments in floodplain, channel margin, and tidal marsh habitat to improve food webs, will improve conditions for covered species sufficiently to</p>	<p>The Lead Agencies acknowledge that uncertainty is inherent in any planning effort of this geographic and temporal scale. However, DWR strived to use the best available science throughout the effects analysis, consistent with the requirements of the ESA. Additionally, the official public review process for the proposed project provides an opportunity for formal public comment on the proposed project and project alternatives. Public and agency comments on the public draft have led to further refinement of the proposed project, as evidenced in the RDEIR/SDEIS.</p> <p>Please see Master Response 44 regarding the decision tree process and how it is intended to work.</p> <p>Regarding operational criteria, please see Master Response 28.</p> <p>A detailed description of the Collaborative Science and Adaptive Management Program is included in</p>

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		<p>meet the HCP/NCCP standards. The second, embedded within the agency red flag comments and "progress reports", is that these steps are insufficient and that lower exports (higher outflow) will be needed to meet these standards. This issue is a paramount concern since it directly affects the economic viability of water supplied from the project.</p>	<p>Chapter 3, Description of Alternatives, of the Final EIR/EIS. For information on adaptive management and monitoring please see Master Response 33.</p> <p>Regarding compliance with the Delta Reform Act, please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS.</p> <p>Please see the table of comments for specific agency comments.</p>
1755	193	<p>As part of CM#1, BDCP will use a decision tree to address initial starting operations. As a starting point, BDCP embodies the two competing hypotheses in the low outflow scenario and high outflow scenario operating criteria, viewing them as brackets on the potential range of operations. The goal of the decision tree is to conduct a series of detailed studies and experiments to develop specific flow criteria, particularly for spring outflow (longfin smelt) and Fall X2 (delta smelt), in the decade before operation of the export facility begins.</p> <p>The decision tree is the first, and probably most important, element of the BDCP adaptive management program. Much of the success of the adaptive management program will be tied to this element, since the original adaptive management and science infrastructure will presumably be built around addressing the competing hypotheses.</p>	<p>Please see response to comment 1755-192.</p>
1755	194	<p>The decision tree approach to addressing starting operations is, in our view, laudable and appropriate. It makes no sense to wait until all uncertainties over this issue are resolved (a course of action proposed by diverse stakeholder groups). Experience says this issue will never be resolved to everyone's satisfaction and will require constant (and contentious) adaptive management. This is a necessary and appropriate step. Regrettably, there is little information given in the BDCP documents about how the decision tree would be implemented, including who would fund it, how it would be structured, how decisions would be made, what science experiments would be conducted, etc. The lack of detail about the decision tree in the BDCP documents raises several key concerns:</p> <ul style="list-style-type: none"> <li>- It takes time to develop and implement a large, complex scientific undertaking of the kind envisioned by the decision tree approach. The Pelagic Organism Decline crisis in the mid-2000's and the mobilization of the scientific community to address it is an example of a successful approach. But that still took considerable time and many issues addressed by the POD effort remain unresolved.</li> <li>- To inform the potential placement and design of habitat restoration efforts to support food webs, new approaches to numerical modeling will be needed that better represent how these habitats function. Finding and funding the technical teams for this kind of work will take time and resources. A particular concern is whether contracting will be run through existing state and federal agencies who are notoriously slow at developing contracts.</li> <li>- In addition, field experiments will be needed to inform and calibrate these models. This involves identifying locations to conduct experiments, modeling and designing actions, acquiring land or easements, implementing pre-project monitoring programs, implementing actions, monitoring responses, and incorporating results into system models. All of these actions take time and resources, but as is well-known by anyone working on ecosystem restoration in the Delta, the rate-limiting step is inevitably the length of time it takes to secure permits (see recent review in Hanak et al., 2013).</li> <li>- Because any decision made regarding flow and habitat will have multiple, competing constituencies and regulatory interests, an extensive and often contentious public</li> </ul>	<p>Please see Master Response 5 regarding governance structure and implementation proposed in the 2013 public draft BDCP.</p> <p>Also see response to comment 1755-192.</p>

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		<p>engagement effort will be needed. The history of the Delta suggests that all such significant decisions are litigated, further slowing this process.</p> <p>These four concerns, as well as others, make us skeptical that the decision tree is likely to achieve the goal of resolving operations issues within a 10 to 15 year time period. We cannot say with certainty that it will not be successful. A committed, well-funded, well-managed effort on the part of all parties may yield useful conclusions. However, given that this is the less likely outcome, it seems imperative that BDCP negotiate export operations criteria that, in the absence of a successful decision tree process, will be implemented at the start of the project.</p> <p>Our work in previous chapters has cast doubt on the viability of the controlling hypothesis that underpins BDCP. To this end, we think it prudent to, at minimum, adopt the high outflow scenario operating criteria as the starting condition if the decision tree fails to identify operating procedures. In addition, if BDCP is truly committed to adaptive management and the use of best available science, it is not appropriate to set artificial boundaries -- high outflow scenario (HOS) and low outflow scenario (LOS) -- on the decision tree process. It is our view that the decision tree research effort should seek to define best operating procedures rather than being forced to operate within the HOS and LOS range. There is a reasonable chance that the decision tree process may ultimately determine that the HOS flow criteria are not protective enough.</p>	
1755	195	<p>Operations:</p> <p>Do operations of the dual facilities meet the broader goal of taking advantage of wet and above average years for exports while reducing pressure on below average, dry and critically dry years? What substantive changes in operations (and responses, see below) are there both seasonally and interannually?</p> <p>We analyzed the CALSIM data on export operations under No Action Alternative, high outflow scenario and low outflow scenario for early long term conditions. We note that the modeling of flows under BDCP has three compounding uncertainties: uncertainty over system understanding and future conditions, model uncertainties associated with CALSIM, DSM2 and UnTrim, and behavioral/regulatory uncertainty, where the model cannot fully capture operational flexibility. For this reason, model outputs should be viewed as approximations useful for comparing different scenarios rather than as a predictor of future conditions. This issue influences all of our conclusions.</p> <p>Based on our review we conclude:</p> <ul style="list-style-type: none"> <li>* The array of existing and projected flow regulations significantly constrains operations in BDCP. The assumed operational flexibility associated with new North Delta facility is limited.</li> <li>* HOS and LOS operations promote greater export during wet periods through increased use of North Delta diversions during the winter and spring. During dry and critical years, there is not much difference in average exports compared to NAA. For this reason, BDCP generally fails to meet the broader objective of reducing pressure on the Delta during dry periods.</li> <li>* In some dry periods regulatory controls on Old and Middle River flows and North Delta diversions lead to significant increases in outflow and OMR flows over NAA. These unexpected results are the consequence of stricter flow requirements for HOS and LOS and</li> </ul>	<p>The CALSIM II, DSM2, and CVHM modeling tools are prospective and not predictive modeling tools. These tools are to be used to compare alternatives, and not to identify absolute values, as described in Chapter 5 of the EIR/EIS. Therefore, the Draft EIR/EIS uses the model outputs for the impact analysis that compares conditions under Alternatives 1 through 9 to conditions under the Existing Conditions and the No Action Alternative.</p> <p>Additional modeling information is also provided in Appendix B, Supplemental Modeling for New Alternatives in the 2015 RDEIR/SDEIS and Master Response 30. For more information regarding operational flows see Master Response 28 and for more information on adaptive management and collaborative science elements of the proposed project, please see Master Response 33.</p>

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		<p>operations being tied to previous water-year type in the fall and early winter. We are unsure if the project would actually be operated this way under these conditions.</p> <p>* We evaluated how NAA, HOS and LOS performed during extended droughts. Of the three scenarios, HOS appears to be most protective of both supply and ecosystems by reducing the frequency and duration of dead pool conditions on Sacramento Valley reservoirs and assuring higher spring and fall outflows.</p> <p>Recommendations: caution must be used in interpreting CALSIM model results for both export and environmental performance of BDCP due to compounding uncertainties. However, modeling results suggest that overall flow conditions are improved over NAA.</p>	
1755	196	<p>Impacts of north Delta facility:</p> <p>Based on operations criteria, does the Plan properly identify ecological impacts likely to occur adjacent to and in the bypass reach downstream of the new north Delta diversion facilities? If there will be direct and indirect harm to listed species by the facilities, does the Plan prescribe sufficient mitigation measures?</p> <p>We reviewed the Conservation Measures and Effects Analysis of BDCP, including supporting appendices to evaluate conditions upstream of the north Delta facility, as well as near- and far-field effects of the facility itself. Our focus was on winter- and spring-run Chinook salmon, rather than all covered species. Based on this review we conclude:</p> <p>* The BDCP consultants have appropriately identified the range of impacts on listed salmon likely to be associated with the operations of the north Delta facility. These include near-field effects such as impingement on intake screens and high predation losses at the facility, to far-field effects such as reduced survivorship of juvenile salmon due to higher transit times and redirection into the interior Delta. Using multiple modeling approaches, they have created reasonable estimates of losses due to operation of the facility.</p> <p>* Mitigation for take associated with the new facility includes restricting diversion flows during initial pulse flows in the river, predator control, non-physical barriers, real-time operations to protect outmigrants, and modification of the Fremont Weir to divert fish onto the Yolo Bypass. With the possible exception of benefits from Fremont Weir modifications the uncertainties over mitigation actions are all high.</p> <p>* We see high potential value in the Yolo Bypass for mitigating the effects of north Delta diversions on juvenile salmon, particularly in drier conditions. Therefore, existing adaptive management programs on the Bypass must be supported, with accelerated pilot studies, monitoring and ecological modeling, to ensure success of any modifications of the Bypass.</p> <p>* Mitigation is hampered by the lack of a viable adaptive management plan or real-time management plan in the current BDCP for the north Delta facility. Still, even with these uncertainties, if managed well, fully implemented and functioning as described in the plan, the actions appear to mitigate for losses associated with the North Delta facilities.</p> <p>* These mitigation efforts alone are unlikely to lead to significant increases in salmon populations, and extinction risk remains high for winter- and spring-run Chinook salmon, particularly during extended drought and warm periods when reservoirs are low. However, reservoir management is not within the scope of BDCP.</p>	<p>Please see Master Response 22 regarding mitigation measures. Master Response 29 discusses compliance with the Endangered Species Act. For information on impact analysis please see Master Response 9 and Master Response 10. Additionally, for information on upstream reservoir effects please see Master Response 25. Adaptive management and monitoring is discussed in Master Response 33 and operational criteria are discussed in Master Response 28.</p>

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		<p>Recommendations: given the uncertainties over mitigation for the north Delta facility, we recommend that all mitigation actions be evaluated and completed prior to initiating operations the north Delta facility. Of highest priority is to bolster and complete adaptive management activities in progress on the Yolo Bypass. Additionally, we recommend establishing an adaptive management and real-time management program with the capacity to conduct significant experiments in flow management, predator control, and non-physical barrier implementation prior to initiating facility operation. These should be conditions of the HCP/NCCP take permit.</p>	
1755	197	<p>In-Delta Conditions:</p> <p>Are changes in operations and points of diversion prescribed in the Plan sufficient to significantly improve in-Delta conditions for covered species? The focus is on listed species, including delta and longfin smelt, steelhead, winter and spring run Chinook, and green sturgeon.</p> <p>The Nature Conservancy focused our analysis on in-Delta conditions that may affect delta smelt and longfin smelt. We reviewed the effects analysis and supporting documentation and conducted our own modeling based on CALSIM output. Based on this work we conclude:</p> <ul style="list-style-type: none"> <li>* The CALSIM output we used showed conditions that appeared anomalous based on our understanding of how the system would actually be operated. Although we have been assured that these conditions were logical consequences of model design and operation to meet flow requirements, we remain unconvinced that they reflect actual future operations under the hydrologic conditions simulated. We therefore caution that the conclusions below are contingent upon the actual operations of the system resembling those in the model output. They are also contingent on the biological models accurately reflecting responses of the species to flow conditions.</li> <li>* Roughly half of the export from the Delta will go through the North Delta facility. In addition, Old and Middle River (OMR) flow regulations are more restrictive (protective) under high outflow scenario (HOS) and low outflow scenario (LOS) than the No Action Alternative (NAA). Thus the incidence of positive OMR flows rose from 11% under NAA to 16% under HOS and LOS conditions. HOS and LOS are consistently more protective of smelt than NAA under these modeling assumptions.</li> <li>* OMR flow regulation under HOS and LOS for October through January is governed by previous water year type. This leads to anomalously high (positive) OMR flows and corresponding outflow during some dry periods, creating apparent benefits for delta smelt. We are uncertain if this would manifest in real operations.</li> <li>* Entrainment results in fractional population losses of delta smelt that can be calculated from modeled flow conditions. Based on these calculations, we estimate that HOS and LOS reduced fractional population losses by half compared to NAA. If actual operations were similar to the model results, they would lead to significant decreases in entrainment.</li> <li>* Estimates of relative differences in long-term survival percentages (not predictions) showed a 19-fold increase for HOS and 11-fold increase for LOS over NAA, albeit with large uncertainty. A difference of this magnitude over the last 20 years would have reversed the decline of delta smelt in the 2000s.</li> </ul>	<p>The commenter’s recommendation is noted. Please see Master Response 28 for information on operational criteria and flows. Also see Master Response 17, Biological Resources. Additional information on the effects of the proposed project on both fish and aquatic resources can be found in Chapter 11 of the final EIR/EIS. For more information on modeling, please see Master Response 30.</p>

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		<p>* Increases in spring outflow are projected by the models to produce only a very small increase in longfin smelt abundance index under HOS compared to NAA, and a comparable decrease under LOS.</p> <p>* Increases in fall outflow under HOS are projected to produce a small increase in recruitment by the following summer, and under LOS a modest decrease, but because of high variability in the data used to make these predictions, these values are very uncertain.</p> <p>Recommendations: we remain uncertain about significant reduction in fractional population losses of delta smelt under the new HOS and LOS operating criteria. We recommend investment in resolving these uncertainties before operations are finalized. If these relationships are supported, then operational rules need to be refined to protect the benefits of these improvements over a broad range of conditions.</p>	
1755	198	<p>Benefits of Habitat Restoration:</p> <p>Are covered pelagic fish like longfin smelt and delta smelt likely to benefit from restoration of floodplain and tidal marsh habitat at the scale proposed by the Plan? Given the current state of knowledge, and assuming that all Plan commitments are met, are these efforts likely to result in relaxed X2 and spring outflow standards?</p> <p>A fundamental hypothesis embedded in the BDCP goals and objectives is that improvements in physical habitat, particularly floodplain and tidal marsh, will improve conditions for covered fishes. We focused our assessment on the relationship between habitat restoration and longfin and delta smelt. Based on this analysis we conclude:</p> <p>* BDCP correctly identifies food limitation as a significant stressor on delta and longfin smelt, particularly in spring through fall. Increasing food availability in smelt rearing areas would likely lead to increases in population.</p> <p>* Tidal marshes can be sources or sinks for phytoplankton and zooplankton.</p> <p>Most appear to be sinks, particularly for zooplankton. There is high on-site consumption of productivity within marshes.</p> <p>* Even under the most highly favorable assumptions, restored marshes would have at best a minor contribution to plankton production in smelt rearing areas.</p> <p>* Smelt can benefit by having direct access to enhanced productivity. This is likely the case for the subpopulation of smelt that reside in Cache Slough.</p> <p>* BDCP is too optimistic about benefits of tidal marsh and floodplain restoration for smelt, particularly the extent of food production. These optimistic views are indirectly guiding the LOS outflow criteria. There is no clear connection, however, between the two and investments in marsh restoration are unlikely to lead to reduced demand for outflows.</p> <p>Recommendations: it is possible but unlikely that marsh restoration will materially improve conditions for smelt, although other ecosystem and species benefits of marsh restoration are much more likely. Only moderate- to large-scale experimental restoration projects are likely to resolve this uncertainty and to help in designing future efforts. BDCP should design and describe a specific program to resolve this issue. Until this uncertainty is resolved flow management will remain the principal tool to mitigate project impacts.</p>	<p>Please see response to comment 1755-153 regarding habitat restoration. Additionally, Chapter 11 of the Final EIR/EIS addresses the effects of restored habitat on delta smelt (see Impact and longfin smelt.</p>

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1755	199	<p>Governance:</p> <p>Does the Plan provide achievable, clear and measurable goals and objectives, as well as governance that is transparent and resilient to political and special interest influence?</p> <p>We analyzed the proposed governance structure of BDCP, including the responsibilities and authorities of new entities such as the Authorized Entity Group (AEG), the Permit Oversight Group (POG), the Adaptive Management Team (AMT), Implementation Office, Program Manager and Program Scientist. Based on this review we conclude the following:</p> <ul style="list-style-type: none"> <li>* The governance plan, as structured, blurs the responsibilities between implementation and regulation. It grants AEG final decision-making power over actions that should be solely within the authority of the permitting agencies. It also involves the permitting agencies too heavily in implementation of the project.</li> <li>* As written, the plan grants the AEG veto authority over proposed changes in the program, including any changes in biological goals and objectives or conservation measures.</li> <li>* The AEG has the power to veto any minor modification, revision or amendment to the Plan that may be necessary to manage listed species.</li> <li>* The regulatory assurances set forth in the draft Plan severely constrain the fish agencies' ability to respond to inadequacies in biological objectives.</li> <li>* Given the high uncertainties inherent in BDCP, it is very likely that unforeseen circumstances will require significant changes in biological goals and objectives and conservation actions. Under the 50-year "no surprises" guarantee, the fish agencies assume financial responsibility for many significant changes. This liability could deter needed regulatory changes to BDCP and CVP/SWP operations.</li> <li>* The procedural hurdles necessary to revoke the incidental take permit of BDCP are so great that revocation is unlikely to occur over the 50-year life of the permit. Indeed, permit revocation and termination of the BDCP would be unprecedented under both state and federal law.</li> </ul> <p>Recommendations: The POG should be granted exclusive regulatory authority to determine whether budgets and workplans are consistent with the permit and to approve revisions to the biological goals and objectives or amendments to the plan. It should have the authority to initiate changes needed to insure protection of the covered species. The POG's functions should be limited to regulatory oversight rather than direct involvement in implementation. There should be a "no surprises" guarantee for construction of the project. Upon completion of the project, there should be renewable "no surprises" guarantees every ten years. These renewals should be based on conditions at the time of renewal and appropriateness of biological goals and objectives. This approach creates an incentive for all parties to adapt to changes in conditions to sustain covered species, rather than simply fulfilling obligations on conservation measures.</p>	<p>Please see Master Response 5 for a discussion of the governance structure proposed in the 2013 public draft BDCP. Also see response to comment 1755-64 regarding changes.</p> <p>A detailed description of the Collaborative Science and Adaptive Management Program is included in Chapter 3, Description of Alternatives, of the Final EIR/EIS. More information on adaptive management can also be found in Master Response 33.</p>
1755	200	<p>Science and Adaptive Management:</p> <p>Is there a robust science and adaptive management plan for BDCP? As described, is the proposed "decision tree" likely to resolve major issues regarding Fall X2 and Spring Outflow prior to initial operations?</p>	<p>Please see Master Response 5 for a discussion of the governance structure proposed in the 2013 public draft BDCP. For more information on the Decision Tree please see Master Response 44. Please also see Master Response 33 for a discussion of the adequacy of the adaptive management program. A detailed description</p>

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		<p>We reviewed the science and adaptive management plans in both the plan and EIS/EIR documents. Most issues with high uncertainty or controversy in the Plan are relegated to resolution through an adaptive management process. Based on the documentation, we conclude:</p> <ul style="list-style-type: none"> <li>* Given the major uncertainties facing BDCP a robust, well-organized and nimble adaptive management plan will be necessary. The current plan adheres to and strongly promotes the principles of adaptive management and science.</li> <li>* The requirement of unanimous consent for all decisions by the Adaptive Management Team (AMT), and veto power of any member of the Authorized Entity Group and Permit Oversight Group is a barrier to adaptive management.</li> <li>* There is a blurring of the responsibilities between regulators and those responsible for implementation of adaptive management that has the potential to create conflicts. There is a conflicting relationship between AMT decision-making and the scientific organizations providing support for decision-making.</li> <li>* The plan recognizes the importance of adaptive capacity, meaning flexibility in operations and actions that allow for learning. Yet it does not describe this capacity in a meaningful way.</li> <li>* There is almost no description of a science program. What is provided lacks evidence for integration with existing programs, transparency, independence from bias and influence, and structured oversight. These are all necessary for success.</li> <li>* The decision tree process to establish initial operating conditions is appropriate. Done well, it can resolve many issues. However, it is unlikely to resolve the central issue over starting conditions in time to implement them.</li> <li>* Although difficult decisions are relegated to a future adaptive management program, actually implementing such a program on such a scale will be very difficult and will require careful design. BDCP does not provide information sufficient to determine whether it will be effective. We remain skeptical that it will.</li> </ul> <p>Recommendations: many of the recommendations for changes in governance made previously will go a long way toward improving the adaptive management program, including the separation of regulators from implementation efforts. However, the plan still needs a complete description of how its adaptive management program would function. The AMT, in whatever form it takes, should be advised by a science program, without scientists responsible for decision-making. The science program should be integrated with existing Delta science programs, rather than inventing a new parallel program. The best opportunity for integration is the current efforts to establish a Delta Science Plan through the Delta Science Program and Delta Stewardship Council. Given that the decision tree is unlikely to fully reduce uncertainties in time, coupled with our concerns over how the project would be operated rather than modeled, we recommend that default starting operating conditions be negotiated that approximates the HOS scenario, with a goal of identifying and operationalizing attributes of this scenario that are most beneficial to listed fishes.</p>	<p>of the Collaborative Science and Adaptive Management Program is included in Chapter 3, Description of Alternatives, of the Final EIR/EIS.</p>
1755	201	[ATT 3: ATT34:	This appendix contains copies of tables 3.4.1-1 and 3.4.1-2 from 2013 public draft BDCP. There is no

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		Appendix A: Operational rules for the proposed North Delta Facility (from Draft Administrative Bay Delta Conservation Plan).]	comment to respond to
1755	202	[ATT 3: ATT35 Table 3.4.1-1. Water Operations Flow Criteria.]	This attachment is Table 3.4.1-1. Water Operations Flow Criteria from the 2013 public draft BDCP. There is no comment to respond to.
1755	203	[ATT 3: ATT36: Table 3.4.1-2. Flow Criteria for North Delta Diversion Bypass Flows from December through June.]	This attachment is Table 3.4.1-2. Flow Criteria for North Delta Diversion bypass Flows from December through June from the 2013 public draft BDCP. There is no comment to respond to.
1755	204	<p>Appendix B: Impaired flows into an impaired estuary.</p> <p>The Sacramento River watershed is the main source of inflow to the Delta and is integral to current operations of the SWP and CVP. The construction of a new North Delta facility will not change the reliance on the Sacramento watershed very much. However, in conjunction with limited changes in reservoir operations and modifications to the Yolo Bypass, it will alter the timing of inflows to the Delta.</p> <p>One of the goals of BDCP and the Delta Plan is to create a more natural flow regime. As noted in Chapter 4, there is little natural about the landscape, and humans are fully integrated into the ecosystem. Still, returning more natural seasonal flow changes will help in managing species whose life history traits are tied to flow cues.</p> <p>The projected changes in outflow under BDCP are presented in Figure 3.1. These monthly averages are compared to current (not early long term) unimpaired outflow from the Delta, an imperfect measure of outflow under unregulated conditions that can be used for comparison of BDCP scenarios. All alternatives, including the no-project alternatives, do little to alter the significant changes in Delta outflow regime. The winter flood pulse associated with high runoff from mixed rain/snow storms has been greatly reduced in all but wet years. More significantly, the spring snowmelt pulse is attenuated, and largely missing in most of the drier years. Only late summer/early fall baseflow seasons have flows that are equal to or larger than unimpaired conditions.</p> <p>Since the Sacramento outflow is a dominant signature for estuarine conditions (second to tides), we examined the magnitude of change in inflow from the Sacramento and compared it to unimpaired flow conditions. We used two simple methods to illustrate the magnitude of change overall and relative changes between ELT scenarios. The first involves calculating a monthly impairment index, I, where:</p> $I = (\text{scenario flow}) - (\text{unimpaired flow}) / (\text{unimpaired flow})$ <p>Where I approaches 0, the scenario flow is less impaired, where I &gt; 0 scenario flows exceed unimpaired flows and where I &lt; 0, scenario flows are less than unimpaired flows. The magnitude of I is a simple way of describing the magnitude of seasonal impairment. These results are summarized in Figure 3.2 for all water year types.</p> <p>The impairment index is strikingly similar in pattern for all year types, with high negative impairments during the winter and spring and high positive impairments for the summer and early fall. This result is surprising because there are only subtle differences between year classes. The only significant variation between year classes occurs in the late</p>	<p>Please see Master Response 3 regarding the project’s purpose and need. For information on compliance with the Delta Reform Act please refer to Master Response 31, Appendix 3I of the 2013 Public Draft BDCP EIR/EIS and Appendix 3J of the Final EIR/EIS.</p> <p>Operational criteria are discussed in Master Response 28.</p>

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		<p>summer/early fall when Fall X2 outflow rules predominate.</p> <p>This broad similarity in impairment highlights how uniform the hydrology of the Delta has become: an issue raised in Lund et al., 2007 and Hanak et al., 2011 as contributing to the regime change in Delta ecosystems. It also shows how little effect the high outflow and low outflow scenarios are likely to have on Sacramento inflows to the Delta.</p> <p>A second approach can be used to characterize total impairment of individual year types. In this, we have plotted unimpaired vs. impaired flow for each scenario and each year type, and fitted a line and calculated <math>r^2</math>. The deviation of the slope of the line from 1 (impaired = unimpaired) illustrates the overall magnitude of impairment, while <math>r^2</math> is a measure of variation in relative impairment. These results are shown in Figures 3.3-3.5.</p> <p>The results of impairment scatterplots shows that in general, the magnitude of impairment, as measured by slope, and the magnitude of variation from unimpaired flow, as measured by <math>r^2</math>, are least in wet years and maximum in drier years. This reflects the dominance of water use and operations on Delta hydrology during dry years when the capacity for water alteration is greatest. In addition, there appears to be no substantive difference between the scatterplots of the different scenarios.</p>	
1755	205	<p>[ATT 3: ATT37:</p> <p>Figure 3.1: Graphs of Delta outflow under HOS, LOS, and NAA ELT in comparison to unimpaired outflow.]</p>	Please see response to comment 1755-204 regarding comment related to this attachment.
1755	206	<p>[ATT 3: ATT38:</p> <p>Figure 3.2: Graphs of Sacramento River impairment index for HOS, LOS and NAA ELT.]</p>	Please see response to comment 1755-204 regarding comment related to this attachment.
1755	207	<p>[ATT 3: ATT39:</p> <p>Figure 3.3. Scatterplot of NAA alternative Delta outflows vs. estimated unimpaired flows for ELT conditions. Higher slope and lower <math>r^2</math> provide a relative measure of impairment.]</p>	Please see response to comment 1755-204 regarding comment related to this attachment.
1755	208	<p>[ATT 3: ATT40:</p> <p>Figure 3.4: Scatterplot of HOS alternative Delta outflows vs. estimated unimpaired flows for ELT conditions. Higher slope and lower <math>r^2</math> provide a relative measure of impairment.]</p>	Please see response to comment 1755-204 regarding comment related to this attachment.
1755	209	<p>[ATT 3: ATT41:</p> <p>Figure 3.5. Scatterplot of HOS alternative Delta outflows vs. estimated unimpaired flows for ELT conditions. Higher slope and lower <math>r^2</math> provide a relative measure of impairment.]</p>	Please see response to comment 1755-204 regarding comment related to this attachment.
1755	210	<p>Appendix C: Effects of changes in flow conditions on entrainment losses of delta smelt.</p> <p>This Appendix describes the methods and results of analyses of flows in the South Delta and their potential effects on delta smelt. The general procedure was to determine a relationship between survival or recruitment during some life stages of delta smelt, and calculate the expected response based on conditions modeled using CALSIM and using historical data. CALSIM results were available for 1922-2003 for three BDCP scenarios: NAA, HOS and LOS. Historical data were used for inflow, export flow, and outflow during</p>	The methods described here represent an alternative to the methods used in the public draft BDCP (see Appendix 5.B, sections 5.B.5.5.1 and 5.B.6.1.5), which were the same as used in the USFWS (2008) BiOp. For more information on modeling for the proposed project please see Master Response 30.

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		<p>1955-2003, and Old and Middle River flows from 1980 to 2003.</p> <p>The calculations were based on results of Kimmerer (2008) as amended for adult delta smelt by Kimmerer (2011). Miller (2011) pointed out some potential biases in that analysis. Young delta smelt may be more abundant in the northern Delta than previously believed, which would mean that the proportional losses calculated by Kimmerer (2008) were too high (Miller 2011); however, this potential bias was not considered amenable to quantitative analysis with the available data (Kimmerer 2011). Nevertheless, the estimates of entrainment losses and reductions in losses herein may actually be somewhat overestimated.</p> <p>The principal assumptions for this analysis are stated in Chapter 6. For the analyses of export losses we used a resampling method to account for uncertainty in the underlying statistical relationships between flow and entrainment. The error distributions from these models were sampled 1000 times to arrive at uncertainty estimates. The same 1000 samples were used for each year and scenario. This allowed us to include variability due to model uncertainty, and to allow direct comparisons among scenarios. The calculation was repeated for each year to provide the variability due to the hydrological conditions modeled under each scenario. Confidence limits were estimated as quantiles of the resulting set of simulated values for each parameter.</p>	
1755	211	<p>Losses of adult delta smelt:</p> <p>Losses as a proportion of the population of adult delta smelt had been estimated from salvage density, catches in the Spring Kodiak and Fall Midwater Trawl surveys, and flows in the south Delta (Kimmerer 2008, 2011). We related these estimates to total southward flow in Old and Middle Rivers:</p> $Q_{sub}(SD) = \begin{cases} 0, & Q_{sub}(OM) \geq 0 \\ -Q_{sub}(OM), & Q_{sub}(OM) < 0 \end{cases} \quad (\text{Eqn. 1})$ <p>where <math>Q_{sub}(SD)</math> is mean flow in the South Delta during December-March, and <math>Q_{sub}(OM)</math> is monthly mean or modeled flow in Old and Middle Rivers.</p> <p>Estimated annual proportional losses <math>P_{sub}(L)</math> were related to <math>Q_{sub}(SD)</math> by linear regression for each year during which data were available (water years 1995-2006),</p> $P_{sub}(L) \sim \max(0, a + bQ_{sub}(SD)) \quad (\text{Eqn. 2})$ <p>where <math>a = -0.03</math> and <math>b = 0.0082 \pm 0.0034</math> are regression coefficients. <math>P_{sub}(L)</math> was calculated using a revised estimate of the scaling factor <math>\Theta</math> which accounts for uncertainty in the calculation of PL; <math>\Theta</math> has a mean of 22 and standard deviation of 5.2 (Kimmerer 2011).</p> <p>Because <math>P_{sub}(L)</math> is a mortality we calculated means for a 20-year period by converting these values to survival, calculating geometric means, and converting back to proportions lost:</p> $\overline{P_{sub}(L)} = 1 - 1/N \prod_{sub}(N) (1 - P_{sub}(Li)) \quad (\text{Eqn. 3})$ <p>where the overbar indicates a mean, <math>N</math> is the total number of years, and <math>P_{sub}(Li)</math> is the proportional loss for each year. The 20-year period was somewhat arbitrary but is roughly the timescale for the decline in abundance of delta smelt. To examine differences between</p>	<p>The results for the method described here gave qualitatively similar results (less entrainment under the BDCP) to the methods used in the public draft BDCP (see Appendix 5.B, sections 5.B.5.5.1 and 5.B.6.1.5), which were the same as used in the USFWS (2008) BiOp. However, this analysis suggested a relatively greater difference between the NAA (EBC2_ELT) and BDCP scenarios than was suggested by analysis presented in the BDCP public draft, reflecting the different regression coefficients. For more information on modeling for the proposed project please see Master Response 30.</p>

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		<p>pairs of the three scenarios we calculated the arithmetic means of differences for each pair.</p> <p>There was little difference in mean P sub(L) values between the full time series used in the analysis and the reduced time series that included the historical period (1980-2003). The No-Action Alternative (NAA) had a slightly lower percent annual loss than the historical period. The High- and Low-Outflow scenarios (HOS and LOS) had similar values that were slightly below half of that of the NAA, or a net change in loss of about 3%/year.</p>	
1755	212	<p>Losses of juvenile delta smelt:</p> <p>Losses as a proportion of the population of juvenile delta smelt had been estimated from the spatial distribution of fish in the 20mm survey and flows in the south Delta supplemented by particle-tracking results (Kimmerer and Nobriga 2008, Kimmerer 2008). We related these estimates to total inflow to the Delta and export flow, noting that these results may vary depending on the proportion of inflow that is from the San Joaquin River. As with adults, CALSIM output was averaged over March-May for each year and scenario.</p> <p>Annual proportional loss was calculated from a regression originally derived from particle-tracking data and applied to estimated losses of young smelt:</p> $P_{sub(L)} \sim \max(0, a + bQ_{sub(In)} + cQ_{sub(Ex)} + dQ_{sub(In)} Q_{sub(Ex)}) \quad (\text{Eqn. 4})$ <p>where <math>a = -3</math>, <math>b = 0.36 \pm 0.17</math>, <math>c = 0.90 \pm 0.24</math>, and <math>d = -0.10 \pm 0.03</math> are regression coefficients (Kimmerer 2008).</p> <p><math>P_{sub(L)}</math> values were accumulated and plotted as above (see Figures in Chapter 6). The annual means for the No Action Alternative were somewhat lower than the historical values, reflecting overall lower export flows than in the historical period. Both of the alternative scenarios resulted in substantial decreases in loss rates from about 14%/year to 3-5 %/year, and the low outflow scenario showed about a 2%/year higher loss rate than the high outflow scenario.</p>	<p>The methods described here represent an alternative to the methods used in the public draft BDCP (see Appendix 5.B, sections 5.B.5.5.1 and 5.B.6.1.5), which were the same as used in the USFWS (2008) BiOp. The results differed somewhat between the methods because of the regression terms used in the modeling (and possibly because the method from the public draft used a slightly longer averaging period, i.e., March-June): there was little overall difference in estimated larval/juvenile delta smelt entrainment loss between the BDCP (i.e., ESO_ELT and LOS_ELT scenarios) and NAA (i.e., EBC2_ELT) from the public draft BDCP (see sections 5.B.6.1.5 and 5.B.6.5.2), reflecting the inclusion of terms for Old and Middle River flows (negatively related to entrainment, and less negative under BDCP) and X2 (positively related to entrainment, and greater under the ESO_ELT and LOS_ELT scenarios); under the HOS_ELT scenario (which has greater spring outflow in some years) entrainment slightly less than under the other scenarios. For the analysis included in the commenter's attachment, the terms included in the analysis were south Delta exports and Delta inflow (minus north Delta intake exports) plus the interaction of the two, which may have accounted for the considerably lower estimates of entrainment under the BDCP than for NAA. For more information on modeling for the proposed project please see Master Response 30.</p>
1755	213	<p>Appendix D: Evidence for food limitation of the smelt species.</p> <p>Delta smelt larvae consume mainly early life stages of copepods, switching to adult copepods as soon as they are able to catch and ingest them (Nobriga 2002, Hobbs et al. 2006, L. Sullivan, SFSU, pers. comm.). Juvenile delta smelt feed mainly on adult copepods (Moyle et al. 1992, Lott 1998, Nobriga 2002, Hobbs et al. 2006), although they consume other zooplankton such as cladocerans in freshwater. The diets of adults include larger organisms such as mysids and amphipods (Bippus et al. poster 2013; Johnson and Kimmerer 2013 talk).</p> <p>Evidence in favor of food limitation (numbers in parentheses indicate the steps in the logic chain in Chapter 7)</p> <p>Both smelt species:</p> <ol style="list-style-type: none"> <li>(1) Following the spread of the overbite clam <i>Potamocorbula</i> in 1987, sharp declines occurred in phytoplankton biomass and productivity, diatom production, and</li> </ol>	<p>This comprehensive summary generally agrees with the conclusion of the BDCP with respect to the critical importance of food (specifically zooplankton) as a constraint to the smelts (see sections 5.5.1.1.2 and 5.5.2.1.1 in Chapter 5 of the BDCP public draft). The analysis of Alternative 4A effects on Delta smelt are presented in Chapter 11 of the Final EIR/EIS.</p>

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		<p>abundance of copepods and mysids, which are the principal prey of both species (Alpine and Cloern 1992, Kimmerer et al. 1994, Orsi and Mecum 1996, Kimmerer and Orsi 1996, Kimmerer 2005, Winder and Jassby 2011)</p> <p>2. (1) At around the same time abundance indices of several fish species declined, notably anchovy, longfin smelt, and striped bass (Kimmerer 2002, 2006, Kimmerer et al. 2009), indicating an overall response of estuarine fish populations to the decline in food abundance. The decline in anchovy abundance in brackish waters (but not in high salinity) was particularly sharp and closely tied in time to the 1987 decline in phytoplankton biomass.</p> <p>Delta smelt:</p> <p>3. (1) Gut fullness of delta smelt larvae was positively related to copepod density (Nobriga 2002). This suggests that when there is more food the smelt larvae eat more.</p> <p>4. (1) Feyrer et al. (2003) found that delta smelt guts averaged about 40% full in Suisun Marsh before <i>Potamocorbula</i> arrived. This was similar to the gut fullness of most other fish species. It suggests that if there were more food the fish would have eaten more, or that there is some other limit to gut fullness.</p> <p>5. (1) The functional response of larval delta smelt from laboratory experiments shows that the feeding rate saturates at a prey concentration well above that seen in any zooplankton samples in the smelt habitat during May-July of 1993-2011 (L. Sullivan, SFSU, unpublished; see Figure A7.1).</p> <p>6. (2) Glycogen was depleted in 30% of fish in summer and 60% of fish in fall of 1999 (Fig. 28C in Bennett 2005) which could be interpreted as evidence of poor nutrition either because of a food shortage or because of some toxic effect; however the frequency of toxic damage was &lt;10% in these fish.</p> <p>7. (2) Mean lengths declined in either 1989 (Bay Study) or 1993 (FMWT study; Fig. 29 in Bennett 2005). The latter year is when the copepod <i>Pseudodiaptomus forbesi</i> shrank back from the low-salinity zone (LSZ) in summer-fall, presumably because of the combined effects of clams and the introduction of other copepods. Bennett (2005, Figure 30) also showed positive relationships between mean length of delta smelt and copepod density (Bennett Fig. 30).</p> <p>8. (3a) Copepod biomass is correlated with an index of survival from summer to fall (Kimmerer 2008).</p> <p>9. (3a) Abundance data show evidence for density dependence between summer and fall when the early years are included (Bennett 2005 Fig. 17). A likely cause of density dependence is food limitation, although other mechanisms are also possible.</p> <p>10. (1-4) Several model analyses show strong effects of food supply on the population rate of increase (Maunder and Deriso 2011, Rose et al. 2013a, b, Kimmerer and Rose, in prep). Note, however, that these models are incomplete and can only show effects based on what is in them.</p> <p>11. A multivariate autoregressive (MAR) model (Mac Nally et al. 2010) showed weak</p>	

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		<p>support for a positive link between calanoid copepod abundance and delta smelt abundance index.</p> <p>Longfin smelt:</p> <p>12. (1) Longfin smelt prey mainly on mysids after summer (Feyrer et al. 2003).</p> <p>Mysids declined sharply after 1987 (Orsi and Mecum 1996, Winder and Jassby 2011).</p> <p>13. (Overall) Abundance of longfin smelt declined sharply after the introduction of Potamocorbula, when the strong effect of freshwater flow is taken into account (Kimmerer 2002, Kimmerer et al. 2009). Striped bass, which also feed on mysids (Feyrer et al. 2003), also declined at that time.</p> <p>14. A multivariate autoregressive (MAR) model (Mac Nally et al. 2010) showed weak support for a positive link between calanoid copepod abundance and longfin smelt abundance index.</p> <p>Evidence that does not support food limitation or is missing:</p> <p>15. The abundance of delta smelt did not change when Potamocorbula arrived or 1993, which were the two times of greatest change in calanoid copepod abundance in the low-salinity habitat of delta smelt</p> <p>16. A changepoint model (Thomson et al. 2010) showed no link between abundance of various zooplankton and abundance indices of either smelt species.</p> <p>17. Sampling for zooplankton is at too coarse a scale to represent the prey abundance that the smelt perceive, and the spatial distribution of prey cannot be replicated in the laboratory. Therefore it may be misleading to extrapolate functional responses from the laboratory to the field.</p> <p>18. There is no direct evidence for effects of food on survival, maturity, or fecundity.</p>	
1755	214	<p>Appendix E: Model of plankton subsidy from marsh to estuary.</p> <p>Here we assume that the restored areas will actually produce an excess of phytoplankton or zooplankton over adjacent waters, and ask what additional level of food availability to the smelt would result. This is based on a very simple model and some calculations using data from IEP monitoring, as noted below. These calculations are unpublished except where a citation is given; details of calculations are available on request.</p> <p>The additional zooplankton biomass available to the open-water areas as a result of production in restored shallow subtidal areas depends on the excess production in the restored areas, the resulting gradient in biomass, the tidal exchange rate between the restored areas and open waters, and the net population growth rate of the zooplankton in the open waters. The benefit of that additional supply to the smelt species depends on the proximity of the restored area to the population centers of the smelt (Fig. 7.2).</p> <p>A simple model of this subsidy is:</p>	<p>Please see related response to comment 1755-160.</p>

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		<p><math>F = (B_{sub(R)} - B) V_{sub(R)} X / BV</math> (Eqn. 1)</p> <p>where <math>F (d^{-1})</math> is the subsidy as a daily proportion of plankton biomass in the receiving water, <math>B</math> is biomass per unit volume, <math>V</math> is volume, <math>B_{sub(R)}</math> and <math>V_{sub(R)}</math> are biomass and volume in the restored area, and <math>X</math> is exchange rate as a daily proportion of the volume of the restored area (<math>d^{-1}</math>). Biomass and volume units cancel out.</p> <p>It is clear from Equation 1 that the subsidy is maximized when the restored area is large, the zooplankton biomass in the restored area is well above that in the open water, and exchange rate is high. However, there is an interplay among biomass <math>B_{sub(R)}</math>, volume <math>V_{sub(R)}</math>, and exchange rate <math>X</math>. First, water depth has three competing effects: 1) Phytoplankton growth rate is highest in shallow water where light penetration is high; 2) For a given area of restoration, volume is inversely related to water depth; 3) any bivalve grazing consumes phytoplankton and zooplankton in inverse proportion to depth. Second, as the exchange rate <math>X</math> increases, net population growth rate within the restored area decreases as organisms are removed by the exchange. If there is no exchange there is no subsidy, but at high levels of exchange there is also no subsidy because the zooplankton are being mixed rapidly compared to their internal growth processes (see Figure 7.3). Cloern (2007) showed that the efficiency of conversion of phytoplankton to zooplankton in a linked shallow-deep system was maximized when the tidal exchange rate <math>X</math> was equal to the net population growth rate of the primary consumers.</p> <p>It is beyond our scope to model explicitly the growth and other processes and consequent biomass levels. However, it is possible to constrain the total phytoplankton and zooplankton biomass within a marsh using available data. During strong blooms nutrients are converted to phytoplankton biomass, but conversion is incomplete because some is lost to other foodweb components such as detritus, bacteria, and zooplankton. Thus, the total amount of dissolved inorganic nitrogen (DIN, comprising nitrate, nitrite, and ammonium) can set an upper limit to total phytoplankton biomass.</p> <p>We used data from the Interagency Ecological Program water quality and zooplankton monitoring programs from 1975-2012. Data used were from May to October to avoid the high variability of winter flows, and to focus on the dry season when the smelt species may be most constrained by food supply. Data were taken from the low-salinity zone, extended to a salinity of 0.5-10, about the range of salinity where delta and longfin smelt are abundant in their first summer, and averaged by year and month.</p> <p>Chlorophyll was converted to phytoplankton C using a carbon:chlorophyll ratio of 50, under the assumption of high light availability. To examine bloom conditions, we used only data for which phytoplankton biomass exceeded 200 mgC/m<sup>3</sup>. From these data, we determined the zero-intercept of a linear model of phytoplankton carbon vs. dissolved inorganic nitrogen (DIN), under the assumption that this represented the maximum conversion of DIN to phytoplankton biomass. This corresponded to about 900 mgC/m<sup>3</sup> (about 40% of the sum of phytoplankton C and DIN converted to C using a molar ratio of 6.6:1). We used that value as the upper limit for phytoplankton C in a marsh. Calanoid copepod C for adults and copepodites was estimated to be about 2.5% of actual phytoplankton C, and we assumed that this proportion would apply to the maximum phytoplankton C, or about 23 mgC/m<sup>3</sup>. Using the same data the median phytoplankton and calanoid copepod C in the open water during 1994-2011 were 73 and 3 mgC/m<sup>3</sup> respectively.</p> <p>The optimum exchange rate was calculated separately for phytoplankton and for zooplankton. For calculation we assume a mean depth of 2m and an area of 1000 ha (2500</p>	

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		<p>ac) in the restored area. From Lopez et al. (2006) the growth rate of phytoplankton in a shallow area can be modeled as</p> $\mu_{\text{sub}}(P) = -0.09 + 1.91/H \quad (\text{Eqn. 2})$ <p>where H is water depth. At a water depth of 2m, this evaluates to 0.86 d<sup>-1</sup>, which we use although a similar model using data from the low-salinity zone (LSZ) in 2006-2007 gave a growth rate that was about 25% lower. We assume that benthic grazing in the restored area is negligible, but cannot neglect grazing by microzooplankton. This can be modeled either as:</p> $g = \max(0, 0.93 \mu_{\text{sub}}(P) - 0.3) \quad (\text{Eqn. 3})$ <p>based on experimental results from the Low-Salinity Zone in 2006-2007 (York et al. 2011), or</p> $g = 0.6 \mu_{\text{sub}}(P) \quad (\text{Eqn. 4})$ <p>from a review of microzooplankton grazing estimates, using values for estuaries (Calbet and Landry 2004). These yield growth rates of 0.5 and 0.35 d<sup>-1</sup> respectively. The latter value is probably more generally representative of a wide range of conditions and for this analysis gives a higher net phytoplankton growth rate.</p> <p>Using an exchange coefficient X set to be close to the net phytoplankton growth rate less grazing of 0.35 d<sup>-1</sup> and using the volume of the LSZ of 0.5 km<sup>3</sup> as V in Equation 1, we get:</p> $F = (B_{\text{sub}}(R) - B) V_{\text{sub}}(R) X / BV$ $= (900-73) (1000 \times 10^{-2} \times 2 \times 10^{-3}) 0.35 / (73 \times 0.5)$ <p>or about 0.16 d<sup>-1</sup>. This is about half of phytoplankton growth, and about twice the (negative) net of growth less grazing by microzooplankton and clams in the LSZ based on field measurements during 2006-2008, which is now subsidized by mixing from other areas of the estuary. Thus, the extremely ideal conditions proposed above would lead to a substantial subsidy of phytoplankton to the LSZ. However, this assumes nearly perfect tuning of the exchange, ideal growth of the phytoplankton with no benthic grazing within the restored area, and perfect mixing of the discharged phytoplankton into the LSZ, which is unlikely because of its tidal movement in relation to the outlet of any marsh.</p> <p>For calanoid copepods the equivalent calculation to that above is</p> $F = (23 - 3) (1000 \times 10^{-2}) \times (2 \times 10^{-3}) 0.1 / (3 \times 0.5)$ <p>or about 0.03 d<sup>-1</sup>. As before, this represents an upper limit of the likely subsidy to LSZ zooplankton. This corresponds to a turnover time of about a month, considerably longer than the population turnover time of the copepods. As with phytoplankton, this is an upper limit of the potential subsidy of copepods, which would be reduced by behavioral resistance to movement such as vertical migration, and by excess predation in the marsh compared to the adjacent open waters. Both of these reductions are likely to be very large.</p>	
1755	215	<p>Zooplankton export from Suisun Marsh:</p> <p>One of the proposed restoration areas is in the northern end of Suisun Marsh. Biomass of calanoid copepods in the southern part of the marsh was about 2x that of the adjacent</p>	Please see response to comment 1755-160.

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		<p>Grizzly Bay, based on a short-term field study and long-term monitoring data (Kimmerer and Marcal 2004). Biomass in the smaller sloughs to the north is apparently higher although nothing has been published on that (J. Durand, UC Davis, pers. comm.).</p> <p>We used output from the UnTRIM hydrodynamic model (MacWilliams et al. in prep., Kimmerer et al. in press) and the FISH-PTM particle tracking model (Kimmerer et al. in prep.) to examine the residence time of particles within Suisun Marsh during the dry season. The hydrodynamic model simulates the entire estuary including marsh channels and bathymetry, but is not specifically set up to replicate flows in the marsh and therefore the results should be considered preliminary. For the entire network of channels it should give acceptable results, but to model the smaller sloughs would require a finer grid for that area.</p> <p>The particle tracking model was run for 45 days in a dry period in the historical data set (starting 1 July 1994) to examine the influence of vertical movement on retention in the estuary. The model was started with particles released throughout the northern estuary in a pattern similar to the distribution of the copepod <i>Eurytemora affinis</i>, the most abundant LSZ resident zooplankton species before <i>Potamocorbula</i> was introduced. Over 9000 particles were released for each run at approximately the same number per unit volume throughout the marsh. Residence time was estimated as the rate of decline of the log of total particles remaining in the marsh.</p> <p>For neutrally-buoyant (i.e., passive) particles, the residence time of the marsh was about 28 days, and particles continuously left the marsh during the 45-day run. Particles that either sank or migrated tidally (down on the ebb and up on the flood) had a more complex pattern but generally the particles in the northern part of the marsh did not leave the marsh during the 45-day run.</p> <p>Taking the passive case first and using available bathymetric data for the volumes of the marsh and Suisun Bay, Equation 1 can be reduced to the following:</p> $F = (B \text{ sub}(R) / B - 1) \times V \text{ sub}(R) / (RT \times V) = (B \text{ sub}(R) / B - 1) \times 0.07 / (28 \times 0.11)$ $= 0.02 (B \text{ sub}(R) / B - 1)$ <p>Based on the existing data cited above for Suisun Marsh, this flux would provide an additional 2%/d of copepods to Suisun Bay if the copepods behaved as passive particles. This is unlikely to produce a noticeable increase in copepod biomass, as their population growth rates are on the order of 10%/d. Any tidal migration or tendency to remain near the bottom (which can be common among zooplankton in shallow, well-lit waters) would greatly reduce or even eliminate the net flux from the marsh to the open waters.</p>	
1755	216	<p>Appendix F: Effects of floodplain inundation.</p> <p>This Appendix explores available data on the response of phytoplankton and zooplankton biomass to flooding of the Yolo Bypass. This is to provide a basis for anticipating effects on the estuarine foodweb from floodplain inundation at lower flows in the Sacramento River.</p> <p>One assumption underlying BDCP plans for increased inundation of the Yolo Bypass is that it would provide a source of phytoplankton and zooplankton to the open waters of the estuary. If so, the much larger floods that occasionally inundate the Bypass now should produce measurable increases in phytoplankton and zooplankton at monitoring stations in</p>	<p>The evaluation of the effects of Alternative 4A are included in the RDEIR/SDEIS, with 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. The potential impacts and benefits to fish are described for each alternative in the impact discussion section in Chapter 11 of the Final EIR/EIS. For more information on adaptive management and monitoring please see Master Response 33. For information on operational criteria please see Master Response 28.</p>

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		<p>the estuary.</p> <p>The basis for this analysis was to use the Interagency Ecological Program (IEP) monitoring data to try to detect an influence of inundation of the Bypass on phytoplankton biomass as chlorophyll concentration, and zooplankton biomass calculated from abundance. IEP data were obtained from six stations in the western Delta to eastern Suisun Bay.</p> <p>Chlorophyll concentration has been determined since 1976 in the zooplankton survey. Abundance of zooplankton has been determined since 1972 by species and gross life stage. We used data on adult and juvenile calanoid copepods, which are common in the diets of delta smelt and other fishes. Abundance data were converted to biomass using carbon mass per individual by species and life stage (see Kimmerer 2006 for details; carbon estimates have been updated).</p> <p>Neither chlorophyll nor copepod biomass showed any effect of inundation of the Bypass. This lack of response is clear for copepod biomass in Fig. F.1, which shows that under high flows in the Bypass the biomass was generally lower than when flows were lower. The data have been stratified by groups of years separated by the time that the clam <i>Potamocorbula amurensis</i> was introduced. During both periods biomass was generally higher when the Bypass was dry than when it was flowing at a low rate (<math>&lt; 500 \text{ m}^3\text{s}^{-1}</math>). Biomass increased slightly in a handful of times when the Bypass was flowing at a higher rate, but even with this increase biomass still did not match that at the lowest flows. The difference in biomass between the pre- and post-clam period is notable at low Bypass flows.</p> <p>Most of the high flows in the Bypass occurred during winter when zooplankton biomass is at its seasonal low. Inundation of the Bypass later in spring at a lower stage of the Sacramento River than is now necessary might provide conditions for higher productivity, but the lack of response of the current system at lower Bypass flows is not promising.</p>	
1755	217	<p>[ATT 3: ATT42:</p> <p>Figure F.1. Graph of copepod biomass as a function of flow in the Yolo Bypass for two time periods. Symbol shapes and colors show the sampling stations from the IEP zooplankton monitoring survey. Green line is from a generalized additive model with a loess (locally-weighted) smoothing function applied to the pre-1987 period and shown in the lower graph for comparison.]</p>	Please see response to comment 1755-216 regarding comment related to this attachment.
1755	218	<p>Appendix G: Can incidental take permits be issued to water contractors?</p> <p>Do the federal Endangered Species Act and the California Natural Community Conservation Planning Act allow the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife to issue incidental take permits to the Central Valley Project and State Water Project contractors?</p> <p>This question is significant, because the draft BDCP provides that the Authorized Entity Group shall be comprised of the Director of the California Department of Water Resources as operator of the SWP, the Regional Director of the U.S. Bureau of Reclamation as operator of the CVP, and one representative each of the CVP and SWP contractors if the contractors are issued permits under the Plan. BDCP 7-8. If we correctly understand the premise of this question, it is that only the owners and operators of the two projects -- the U.S. Bureau of Reclamation and the California Department of Water Resources -- are eligible to hold the incidental take permit that would govern construction and operation of the facilities</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.</p> <p>Please see response to comment 1755-167.</p> <p>The 2013 public draft BDCP was written under the assumption that the state and federal fish and wildlife agencies would each issue jointly-held permits to DWR and all participating state and federal water contractors, as co-permittees.</p>

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		<p>authorized by the BDCP.</p> <p>Although there is no definitive answer to this question, we conclude that the CVP and SWP contractors may receive incidental take permits. We base this conclusion on four factors: (1) There is nothing in either the federal Endangered Species Act or the California Natural Community Conservation Planning Act that prohibits the fish and wildlife agencies from issuing incidental take permits to entities such as the CVP and SWP contractors who receive water service from (and therefore are beneficiaries of) the permitted project operators. (2) The text of both statutes allows for the grant of incidental take permits to persons or entities other than the owners and direct operators of the projects governed by an HCP and NCCP. (3) There is precedent for the inclusion of both government entities and private landowners and resource users within a single HCP/NCCP. (4) There are good reasons both for the CVP and SWP contractors to seek the protections of an incidental take permit and for the fish and wildlife agencies to include the contractors within the management structure of the BDCP. It is therefore likely that the courts would defer to the agencies' decision to issue incidental take permits to the contractors.</p> <p>The incidental take permitting and HCP provisions of section 10 of the federal ESA authorize the taking of individual members of a listed species that otherwise would be prohibited by section 9(a)(1)(B) of the Act. 16 U.S.C. [Section] 1538(a)(1)(B). The take prohibition of section 9 applies to "any person subject to the jurisdiction of the United States." Id. [Section] 1538(a)(1). The statute defines "person" as meaning</p> <p>"an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States." [Id. [Section] 1532(13).]</p> <p>This definition expressly includes the CVP and SWP contractors, which are comprised primarily of instrumentalities of the state (and, in the case of the CVP, includes some individuals). The statute thus extends eligibility for (limited and conditional) exemption from the take prohibition of section 9 to the project contractors, and it contains no exclusion from this eligibility based on the fact that the contractors do not themselves own or operate the project.</p> <p>The California Natural Community Conservation Planning Act addresses this question even more directly. In its articulation of the purposes of the statute, the Legislature stated:</p> <p>"Natural community conservation planning is a cooperative process that often involves local, state, and federal agencies and the public, including landowners within the plan area. The process should encourage the active participation and support of landowners and others in the conservation and stewardship of natural resources in the plan area during plan development using appropriate measures, including incentives." [California Fish &amp; Game Code [Section] 2801(j).]</p> <p>The Act also declares that "Any person, or any local, state, or federal agency, independently, or in cooperation with other persons, may undertake natural community conservation planning." Id. [Section] 2809.</p> <p>Indeed, the fish and wildlife agencies approved this type of multiparty, multijurisdictional, cooperative approach in the Orange County HCP/NCCP for the protection of the coastal</p>	

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		<p>gnatcatcher, other target species, and their habitat. The cooperating and individually permitted entities include the County of Orange, the cities of Anaheim, Costa Mesa, Newport Beach, Irvine, Laguna Beach, Orange, and San Juan Capistrano, as well as other participating public and private landowners and water users, such as Southern California Edison, the Metropolitan Water District, Irvine Ranch Water District, the Irvine Company, UC Irvine, the California Department of Parks and Recreation, and transportation corridor agencies. (County Of Orange, Final Natural Community Conservation Plan and Habitat Conservation Plan, Central and Coastal Subregion (1996), document available at <a href="http://www.naturereserveoc.org/documents.htm">http://www.naturereserveoc.org/documents.htm</a>.) Although this situation does not precisely mirror the relationship between the CVP and SWP and their contractors, it does serve as precedent for creation of an HCP/NCCP that includes both land and resource management agencies and public/private land and resource users as incidental take permit holders.</p> <p>Finally, it makes sense for the CVP and SWP contractors to seek the protections of the incidental take permits governing operation of the facilities authorized by the BDCP, as it is their uses of project water that would potentially violate the federal and state take prohibitions. The contractors thus would benefit both from the security provided by the incidental take permits and from participation in the decisions that would shape implementation and compliance with the terms and conditions limiting coordinated CVP/SWP operations set forth in the BDCP. Concomitantly, it is in the fish and wildlife agencies' interest to have the contractors participate as permittees so that disputes between the contractors and USBR and DWR as project operators may be resolved within the forum of the Authorized Entity Group, rather than outside the purview and procedures of the BDCP. Under these circumstances, we believe that it is likely that the courts would defer to the fish and wildlife agencies' reasonable interpretation of the statutes as authorizing the grant of incidental take permits to the CVP and SWP contractors. See <i>Chevron U.S.A. v. Natural Resources Defense Council</i>, 467 U. S. 837 (1984); <i>American Coatings Ass'n. v. South Coast Air Quality Dist.</i>, 54 Cal.4th 446 (2012).</p>	
1756	1	I think the Delta Tunnels is a bad solution for best water management.	The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 DEIR/EIS.
1757	1	I have been following news reports and local dialogue ever since the BDCP was proposed. I have attended public meetings in Stockton to inform the local residents about the BDCP and the California Dept. of Water Resources presentation and information session on the BDCP. In all that I have read, seen, and heard, there is not justification in the BDCP to allow the largest public works project in US history to happen. The need to plan, finance, and construct the massive Bay Delta Conservation Plan has not been established. Water diversion and distribution from Northern California to Central and Southern California is already in place.	The issues raised by the commenter address the merits of the project and do not raise any issues with the environmental analysis provided in the EIR/EIS documentation.
1757	2	Why do we need to incur billions and billions of dollars of spending debt on taxpayers, the state of California, and the Federal Government for a water project that will not produce more water than we already have in the present system.	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 an HCP. Alternative 4A has been developed in response to public and agency input. 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

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			<p>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>
1757	3	<p>A far wiser use of state funding would be to improve and develop new systems of water retrieval, cache basins and reservoirs in areas where water is taken from the north to the south. In other words, let us seek out solutions and plans locally in those areas where water is most needed rather than simply draining more water from the Sacramento-San Joaquin Delta.</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 FEIR/EIS, describes the potential for additional water storage.</p> <p>Please see Master Response 4 regarding the development of alternatives. Please see Master Response 6 for information on Demand Management. Please see Master Response 37 regarding water storage.</p>
1757	4	<p>Calling the BDCP a conservation plan that will save the habitat of a dying Delta is pure nonsense and misinformation. The Sacramento-San Joaquin Delta is not dying and the BDCP has not shown or proven that it is.</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. The Delta has been significantly altered by a system of manmade levees and dredged waterways constructed to support farming and urban development, and to provide flood protection. The natural flows also are altered by operations of the State Water Project and Central Valley Project. Several native fish species populations have declined. In response, federal and state regulators placed limits on water deliveries. The Delta is also threatened by continuing land subsidence, seismic risk, and effects of climate change.</p> <p>It is the policy of the State of California, as set forth in the Delta Reform Act to "protect and enhance the unique cultural, recreational, and agricultural values of the California Delta."</p> <p>For more information regarding purpose and need of the proposed project please see Master Response 3.</p>
1757	5	<p>There is salt water intrusion from the San Francisco Bay Estuary because we are diverting too much water south, especially during drought conditions, such as we have now. Salt water intrusion will increase and accelerate with implementation of the BDCP and its ability to divert as much as 2/3 or more of the freshwater flow from the Sacramento River, the largest confluence of streams and rivers in northern California sustaining many different life forms among extensive and varied habitat.</p>	<p>The water quality assessment of the diversion of Sacramento River water under the project alternatives addresses effects on salinity-related parameters in the Delta, including electrical conductivity (EC) and compliance with related agricultural and fish and wildlife objectives in the Bay-Delta Water Quality Control Plan and degradation relative to these uses in Impact WQ-11 in Chapter 8, Water Quality.</p> <p>The Final EIR/EIS proposes Alternative 4A as the preferred alternative. Alternative 4A would result in substantially lesser water quality impacts to salinity-related parameters, including EC as compared to the preferred alternative in the Draft EIR/EIS. Alternative 4A would still have significant impacts to EC; however, feasible mitigation measures were introduced to reduce the identified impacts to less than significant levels to protect beneficial uses and achieve compliance with SWRCB D-1641 standards.</p>
1757	6	<p>If allowed to happen, the BDCP would not only compromise and damage water quality, and habitat in the Delta region, the San Francisco Bay Estuary would be severely damaged and impacted as well.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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</p>

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			<p>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>
1758	1	<p>Wake up California residents! The state of California, Governor Jerry Brown, the Department of Water Resources, and a handful of water districts and water contractors, a few agribusiness farmers, and frack miners have spent many millions of dollars to fast track the Bay Delta Conservation Plan (BDCP). The plan would put unlimited access and control of Sacramento River water diversions in the hands of a few who would profit monetarily from water sales. Stop the Tunnels Save the Delta, California's largest inland waterway is at stake.</p>	<p>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 documentation. The project has been initiated and carried forward by two Governors acting on a mandate from the voters of the State as a whole and not as a result of large corporations (i.e., agribusinesses and oil industry). In fact, this issue is beyond the scope of the project as the Lead Agencies do not have local land use/zoning authority.</p>
1758	2	<p>The BDCP is a disaster plan to drain the Sacramento River (a product of many rivers and streams) into peripheral canals. Excavate 150 feet below the river bottom. Build 2 40 foot diameter tunnels (pipelines), 35 miles long with fish screens, intake and out take pumps to divert as much as 2/3 of the flow of the Sacramento River. The estimated cost upwards of \$50 billion and construction time of 10 years is not clearly known by the state of California. We do know that a few water agencies, contractors, agribusiness farmers, and frack miners in Fresno, Tulare, Kern, and Imperial Counties will get wealthy from the water rights and sales. What will California residents get? Ours and future generations will inherit the cost of building and maintaining this monstrous water diversion project, seizing many thousands of acres of prime farmlands and following litigation, financing and interest, and losing precious water quality and quantity for human and wildlife habitat in both the Delta Region and San Francisco Bay.</p>	<p>The Lead Agencies respectfully disagree with the commenter's assertion of the plan draining the Sacramento River. The preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP. Master Response 36 explains how the BDCP or the California WaterFix Project is different from the previously proposed Peripheral Canal. The Natural Resources Agency and DWR staff will continue seeking improvements and refinements to the current proposal in order to enhance species benefits and to avoid, reduce or mitigate for negative impacts to people, communities, sensitive species and habitats. The Lead Agencies acknowledge the discussion of community character in Chapter 16 of the Draft EIR/EIS and RDEIR/SDEIS Appendix A (Socioeconomics) identifies the unique features of the Delta and describes the potential effects on Delta communities. For other matters raised by the commenter in reference to the Delta ecosystem and communities, refer to the following Master Responses: Master Response 5 (Overview of Restoration and Enhancement Activities), and Master Response 24 (Delta as a Place). In addition, please refer to the RDEIR/SEIS including Sections 4, 5, and Appendix A (e.g., Chapter 11 [Fish and Aquatic Resources], Chapter 12 [Terrestrial Biological Resources], and Chapter 14 [Agricultural Resources]). Lastly, the project was initiated by former Governor Arnold Schwarzenegger, who was twice elected by a majority of California voters. The process has continued under the administration of his successor, Edmund G. Brown, Jr., who has publicly stated his tentative support first for Alternative 4 as set forth in the Draft EIR/EIS and now for Alternative 4A as described in the RDEIR/SDEIS, though he has acknowledged the need to complete environmental review and to obtain additional public input prior to making any final decisions on the project. Hence, the project has been initiated and carried forward by two Governors acting on a mandate from the voters of the State as a whole. The environmental documentation and project approval will be acted on by the decision makers from each lead agency at the conclusion of the CEQA and NEPA processes.</p>
1759	1	<p>The Bay Delta Conservation Plan (BDCP) is a disaster plan to build two tunnels 40 feet in diameter, 35 miles long, 150 feet below the Sacramento-San Joaquin Delta. Potentially, 2/3 of the flow of the Sacramento River (a product of many rivers and streams in northern California) could be diverted to cities and farmers south of the Delta. Adverse effects of the plan include lowering of water quality in the Delta and San Francisco Bay, restriction of fish migrations and recreational use, lost bird and wildlife habitat, lowering groundwater levels and quality, loss of thousands of acres of prime farmland, spiraling costs to taxpayers and regional economy.</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. The action alternatives could only deliver the amount of water diverted under the existing SWP and CVP water rights and in accordance with the existing and future related regulatory requirements based upon river water levels and flow, water available in the system, the presence of threatened and endangered fish species, and water quality standards. The water conveyance facilities, including water intakes and pumping plants would be operated in accordance with permits issued by the State Water Resources Control Board, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and State Department of Fish and Wildlife. The proposed project only would be permitted to operate with regulatory protections, including river water levels and flow, which would be determined based upon how much water is actually available in the system, the presence of threatened fish species, and water quality standards.</p>

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			<p>The Final EIR/EIS describes benefits and adverse impacts that could occur in the Delta through implementation of the various action alternatives as compared to the Existing Conditions and the No Action Alternative.</p> <p>For more information regarding purpose and need please see Chapter 2 of the FEIR/EIS and Master Response 3.</p>
1759	2	<p>The tunnels would cost upwards of 50 billion dollars for land seized, equipment, materials, construction, financing, and legal battles. Public works projects typically far exceed initial construction time, cost, financing and legal estimates.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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>
1761	1	<p>I strongly oppose the Bay Delta Conservation Plan (BDCP), a monstrous plan by the state of California and water contractors to build 2 tunnels (pipelines) 40 feet in diameter, 35 miles long, 150 feet below the Sacramento-San Joaquin Delta. 2/3 of the flow of the Sacramento River would be diverted to cities and farmers south of the Delta region. The largest supply of fresh water would be made unavailable to fish, birds, humans, and other species in both the Delta and the estuary of the San Francisco Bay.</p>	<p>The water conveyance facilities, including water intakes and pumping plants would be operated in accordance with permits issued by the State Water Resources Control Board, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and State Department of Fish and Wildlife. The proposed project only would be permitted to operate with regulatory protections, including river water levels and flow, which would be determined based upon how much water is actually available in the system, the presence of threatened fish species, and water quality standards. More information on the ranges of project water diversions, based on water year types and specific flow criteria, can be found in Chapter 3, Section 3.6.4.2, North Delta and South Delta Water Conveyance Operational Criteria, EIR/EIS.</p>
1761	2	<p>To call it a conservation plan, the BDCP proposes to create 145,000 acres of habitat by seizing private farms at a multi-million dollar cost to taxpayers and the Delta regional economy. There is no guarantee that habitat creation will work.</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 an HCP. Alternative 4A has been developed in response to public and agency input. 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</p>

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			was ultimately approved at the conclusion of the CEQA/NEPA process.
1761	3	Planners estimate 10 years to construct the tunnels. Adverse effects include 24/7 heavy construction traffic and noise, increased air pollution, lowering of groundwater quality and supply, restriction on recreational use of the Delta, increased saltwater intrusion, a beautiful natural waterway would become an awful eyesore, loss of thousands of acres of prime farmland, and many other significant and unavoidable impacts.	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 to improve water volume, timing, and salinity, the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility. No issues related to the adequacy of the environmental impact analysis in the EIR/EIS documentation were raised.
1761	4	The tunnels will cost an estimated 25 to 50 billion dollars for land, equipment, construction, financing, and bond measures. Water contractors will help finance the BDCP. In the end, taxpayers of California would pay the bulk of construction, financing, and operating costs. Public works projects typically far exceed initial construction time, cost, and financing estimates.	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 an HCP. Alternative 4A has been developed in response to public and agency input. 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.
1762	1	The Bay Delta Conservation Plan (Nov. 2013) ("BDCP") proposes to dramatically alter the way in which the Sacramento River and Sacramento-San Joaquin Delta ("Delta") waters are allocated and flow through the Clarksburg District.  As the Managing Members of Lake Winchester Vineyards, LLC ("Lake Winchester Vineyards") in Clarksburg, we are gravely concerned about the potential significant impact of the proposals of the BDCP on local commercial operations, real property usage, environmental and socio-economic impacts.	The action alternatives would change the flow patterns as compared to the Existing Conditions and the No Action Alternative, as described in Appendix 5A, Section C, of the EIR/EIS. The changes would vary in the action alternatives based upon the operational criteria in each alternative. However, the alternatives would not change water allocations because the proposed project could only deliver water to the SWP and CVP under the existing water rights allocations.  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 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.
1762	2	A number of state and federal entities are formulating various services, strategies, policies, habitat conservation plans, reports and other procedures which will have potentially significant impacts. These plans could seriously damage Lake Winchester Vineyards, the lake itself, the neighboring properties and the unique wildlife habitat that rural lands and waterways provide.	Water elevations in Lake Winchester would be affected under Alternatives 1 through 9 as compared to the Existing Conditions and the No Action Alternative in a similar manner as shown in Appendix 5A, Section C, in the Final EIR/EIS for the Sacramento River at Freeport.

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		Lake Winchester Vineyards is home to many endangered species, including the Swenson Hawk, Elderberry Beetle and Burrowing Owl, among others. All of these are dependent on the waters for survival and would be significantly impacted by water flow disruption.	
1762	3	Ducks Unlimited, an international non-profit organization dedicated to the conservation of wetlands and waterfowl, has selected the unique physical environs of this property to create, in partnership with Lake Winchester Vineyards, a five acre natural wildlife fowl habitat. Key to the decision of Ducks Unlimited, a world leader in waterfowl conservation, to create this wildlife habitat at Lake Winchester Vineyards was the availability of water for the marshy wetlands to support the wildlife environs. The impacts to wetlands conservancy and endangered species are not adequately addressed in the EIR/EIS.	The commenter states an opinion that effects to wetlands and endangered species are not adequately addressed in the Draft EIR/EIS but does not specifically identify how the conservation of wetlands is inadequate and which endangered species are inadequately addressed. The comment presents the opinion and does not request specific changes to the analyses contained in Chapter 12 of the Draft EIR/EIS. No technical changes to the document have been prepared in response to the comment.
1762	4	<p>Chapter 6 of the EIR/EIS purports to analyze the significant and serious effects and impacts because of changes in the surface water as a result of the project's alternatives. However, Chapter 6 focuses almost exclusively on the changes in the level of surface water in and around both the Delta and the State of California as a result of the project alternatives; it fails to analyze or discuss the quality or quantity of surface water available or used by existing surface water users as either an impact or effect.</p> <p>Specifically, the plan fails to analyze significant and substantial impacts of lowered surface water tables both in terms of existing water users and for continuing quality of water for the required uses. The EIR/EIS fails to adequately address the potential impacts to the quality of the surface water.</p>	<p>As described in response to Comment 1762-2, water elevations in Lake Winchester would be affected under the action alternatives as compared to the Existing Conditions and the No Action Alternative in a similar manner as shown in Appendix 5A, Section C, in the EIR/EIS for the Sacramento River at Freeport.</p> <p>The effects on agricultural activities are addressed under in Chapter 14, Agricultural Resources, in the Draft EIR/EIS. For more information about effects analysis, see Master Response 5. For more details about water quality issues, see Master Response 14. See also response to comment 1762-1.</p>
1762	5	<p>The Clarksburg Agriculture District relies in part on ground water through existing wells located in the District. Chapter 7 purports to analyze the significant and serious effects and impacts because of the changes in the groundwater as a result of the project alternatives.</p> <p>However, Chapter 7 fails to analyze or discuss the quality or quantity of groundwater available or used by existing Clarksburg ground water users as either impacts or effects as a result of any of the project alternatives.</p>	<p>As described under Section 7.3.3.2 of Chapter 7, Groundwater, of the EIR/EIS, groundwater impacts are related to dewatering activities during construction of the conveyance facilities (Impact GW-1); during operation of the forebay facilities (Impact GW-5); and during operation of tidal, channel margin, and seasonally inundated floodplain restoration sites (Impact GW-6). During construction, dewatering wells would be installed at the intakes, levees, forebays, pumping plants, and tunnel shafts; and along the pipelines near the intakes and forebays. No dewatering would be required along the tunnel alignment. Following construction, the groundwater elevations would rise towards pre-construction elevations. Mitigation measures have been identified in the EIR/EIS. In most cases, the mitigation measures would reduce the impacts to become less than significant as compared to Existing Conditions.</p> <p>The effects on agricultural activities, which could include agricultural activities on the refuges, are addressed under Agricultural Impact AG-2 (see Chapter 14, Agricultural Resources, in the Draft EIR/EIS). The impacts to agricultural production due to temporary construction activities that could result in disruption of irrigation or drainage infrastructure, and could jeopardize agricultural production. Implementation of Mitigation Measures AG-1, GW-1, GW-5, and WQ-11 will reduce the severity of these impacts by implementing activities such as siting project footprints to encourage continued agricultural production; monitoring changes in groundwater levels during construction; monitoring seepage effects; relocating or replacing agricultural infrastructure in support of continued agricultural activities; identifying, evaluating, developing, and implementing feasible phased actions to reduce EC levels; engaging counties, owners/operators, and other stakeholders in developing optional agricultural stewardship approaches; and/or preserving agricultural land through off-site easements or other agricultural land conservation interests. As described in Mitigation Measure AG-1 in Chapter 14, Agricultural Resources, in the EIR/EIS, adversely affected wells, pipelines, power lines, drainage systems, and other infrastructure that are needed for ongoing agricultural uses and would be adversely affected by project construction or operation would be relocated or replaced. However, these impacts remain significant and unavoidable and adverse to agricultural resources.</p>

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1762	6	<p>Chapter 8 does not appear to address changes in water quality available for agriculture production activities. The principle crop of the Clarksburg Agricultural District is wine grapes. This is a permanent crop installed at tremendous capital expenditure.</p> <p>Changes in the quality of the ground water could significantly adversely affect the grape-growing industry in the District and could result in drastic economic and sociological consequences. The EIR/EIS must fully analyze such significant effects and impacts arising from changes in water quality in the Clarksburg Agricultural District in order to be complete.</p>	<p>The proposed project does not include an HCP or NCCP component, or large-scale habitat restoration that would be initiated prior to operations of the proposed conveyance facilities. Without implementation of large-scale habitat restoration, the effects on salinity under the action alternatives as compared to the No Action Alternative would be less than with large-scale restoration. For example under Alternative 4A, salinity generally would be similar or less than under No Action Alternative in the central Delta (e.g., near Jersey Point, Rock Slough, and along Sacramento River downstream of Steamboat Slough). However, salinity would increase under Alternative 4A as compared to the No Action Alternative in July through September along the Sacramento River near Collinsville and Emmaton; and generally decrease or be similar in remaining months, as presented in Appendix 5A, Section C, of the Final EIR/EIS. Please see Chapter 8 and associated appendices in the EIR/EIS and Master Response 14, for more details about salinity and water quality. Therefore, it is not anticipated that groundwater quality would substantially change under Alternative 4A as compared to the No Action Alternative due to operations of the conveyance facilities.</p> <p>Chapter 8 of the Final EIR/EIS fully addresses surface water quality throughout the Delta, including the Clarksburg area, and assesses potential impacts to agricultural beneficial uses. No significant impacts to agriculture were identified for any of the action alternatives due to water quality in the Clarksburg area as compared to the Existing Conditions or No Action Alternative.</p> <p>The EIR/EIS modeling results for the No Action Alternative indicate that, with or without the project, rising sea levels will bring saline tidal water further into the Delta than occurs at present. These changes would occur with or without implementation of the Proposed Project and no mitigation is required.</p>
1762	7	<p>The residents and businesses in the Clarksburg Agriculture District rely on a small number of small two lane rural roads for transportation within the Delta and beyond. Large scale construction as planned would result in devastating economic and social impacts to the people and business of the area. No mitigation is offered to offset the traffic and transportation impacts.</p>	<p>Table 19-10 of Draft EIR/EIS Chapter 19, Transportation, identifies local roadway segments that are deficient. Mitigation Measures TRANS-2a, b, and c seek to eliminate or reduce traffic on those segments or to improve the condition of those pavement sections if use cannot be avoided. However, the lead agencies realize that this may not be feasible for all segments. Mitigation Measure TRANS-2c also includes remediation of roads to their condition prior to project construction, or better. Mitigation Measure TRANS-2c also includes coordination with affected agencies to accomplish this objective.</p> <p>Please refer to Chapter 16, Socioeconomics, regarding changes in community character and impacts on regional economics.</p>
1762	8	<p>Section 14.2.2.3, page 14-20 lines 3 to 21, with reference to the Delta Protection Commission ("DPC") and its work fails to mention or analyze the DPC's Economic Sustainability Plan ("ESP"). Cutting across a number of sections written into the Draft EIR/ESP, but with particular focus of Delta agriculture, the ESP is an important planning and legal document formally adopted by the DPC. Many of the components of the ESP have been incorporated into and made a part of the Delta Plan, formally adopted by the Delta Stewardship Council. The ESP must be considered in the EIR/EIS.</p> <p>Lake Winchester Vineyards requests that the final EIR/EIS clearly identify all places where each and every comment above is addressed.</p>	<p>Please see Draft EIR/EIS Chapter 16, Socioeconomics, Section 16.2.2.3 for a discussion of the Economic Sustainability Plan for the Sacramento-San Joaquin Delta. Also, please see Chapter 16 in the Final EIR/EIS for discussion of potential effects on agricultural production and employment in the Delta. For more information about the Delta as a Place, see also Master Response 24.</p>
1763	1	<p>Project Description</p> <p>The California Department of Water Resources (CDWR) and the U.S. Bureau of Reclamation (USBR) propose to implement various activities, including physical and operational improvements, related to their joint operation of the State Water Project (SWP) and Central Valley Project (CVP), which together make up the water conveyance system for much of the water supply in the state. Because SWP/CVP improvements and operations result in the</p>	<p>The comment does not raise any environmental issue related to the 2015 RDEIR/SDEIS or the 2013 Draft EIR/EIS. 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</p>

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		<p>incidental take of species listed under the state and federal Endangered Species Act (ESA), DWR prepared the BDCP as part of its applications for Incidental Take Permits from the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the California Department of Fish and Wildlife (CDFW). The BDCP sets out a comprehensive conservation strategy for the Delta to restore and protect ecosystem health, water supply, and water quality over the next 50 years.</p> <p>The BDCP includes the following components:</p> <p>Water Flow. Manage the routing, timing and amount of flow through the Delta while establishing an interconnected system of conservation lands across the BDCP area, including the Yolo Bypass Fisheries Enhancement;</p> <p>Habitat Restoration. Restore, enhance and manage physical habitat to expand the extent and quality of intertidal, floodplain, channel margin, riparian, vernal pool, grassland, and marsh habitat;</p> <p>Manage Negative Stressors. Reduce the adverse effects of various stressors on covered species through methylmercury management, invasive aquatic vegetation control, localized reduction of predatory fishes, and urban stormwater treatment; and</p> <p>Avoidance and Minimization Measures. Avoid or minimize direct take of covered species and minimize impacts on natural communities that provide habitat for covered species.</p> <p>The EIR/EIS identifies Alternative 4 as the environmentally superior alternative.</p>	<p>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.</p> <p>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.</p>
1763	2	<p>Jurisdiction. After reviewing the information contained in the EIR/EIS, California State Lands Commission (CSLC) staff has determined that some BDCP activities will occur on State-owned sovereign land in various waterways under the jurisdiction of the CSLC. Please be advised that California Code of Regulations, Title 2, section 2030, subdivision (a) prohibits the CSLC from selling sovereign tide and submerged lands. Additionally, there are complex legal issues relating to the location and extent of sovereign lands within the BDCP area which may affect the use, conveyance, and/or encumbrance of these lands. CSLC staff requests that DWR submit additional information such as detailed current and historical maps, title reports, intended use, and engineering designs as soon as possible to help CSLC staff determine the extent of sovereign lands in the BDCP area as well as the exact components of the BDCP that will require a lease or other authorization. Please contact Wendy Hall (see contact information below) for further questions about the extent of the CSLC's sovereign ownership and leasing or other authorization requirements.</p> <p>1. Wendy Hall, Public Land Management Specialist, at (916) 574-0994, or via email at wendy.hall@slc.ca.gov.</p>	<p>See response to comment 1763-1. The preferred alternative, Alternative 4A, no longer includes an HCP/NCCP.</p> <p>DWR Staff have met with CSLC staff to begin coordination on these issues.</p>
1763	3	<p>Navigational easement. Please also be advised that the waterways in the BDCP are subject to a public navigational easement. This easement provides that the public has the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses.</p>	<p>Since the time of the Draft EIR/EIS additional navigation impact analyses have been added to Chapter 19, Transportation and Appendix 1F, Supplemental Information for U.S. Army Corps of Engineers has been added to this Final EIR/EIS.</p>
1763	4	<p>Public Trust coordination. California State Lands Commission (CLSC) staff has been involved in ongoing coordination with DWR regarding the BDCP and its potential to impact public</p>	<p>Coordination with California State Lands is appreciated and DWR will ensure that the CSL's Public Trust</p>

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		trust uses and values. The EIR/EIS discloses the impacts of implementing the BDCP on public trust uses including navigation and water-based recreation, commerce, and transportation. CSLC staff is available for further coordination to ensure that impacts to public trust uses are minimized during the implementation of Conservation Measure 1 in the BDCP. CSLC staff will also available for coordination during future project-level CEQA analysis for BDCP Conservation Measures 2-22.	issues are addressed. See also Master Response 13 regarding the Public Trust Doctrine.
1763	5	Thank you for the opportunity to comment on the EIR/EIS for the BDCP. As a responsible and trustee agency, the California State Lands Commission will need to rely on the Final EIR/EIS for the issuance of any new lease or other authorization as specified above and, therefore, we request that you consider our comments prior to certification of the EIR/EIS.	The request for future project-related documents has been noted and the CSLC, along with the public, will have access to those documents as they become available. All comments will be considered prior to certification of the EIR/EIS. See also Master Responses 40 and 42 regarding public outreach and comments, respectively.
1764	1	<p>I oppose the construction of the BDCP Twin Tunnels Project under the Sacramento-San Joaquin river system. Some of my reasons are as follows, and I do not think the BDCP will meet all of the requirements of the 2009 Delta Protection Act Water Codes. Some areas of concern are:</p> <p>Water Code Section:</p> <p>85020(b) states - Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place</p> <p>85020(d) Promote statewide water conservation, water use efficiency and sustainable water use</p> <p>Section 85021 water code:</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 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>Section 85320(b) Water Code states: The BDCP shall not be incorporated into the Delta Plan and the public benefits associated with the BDCP shall not be eligible for state funding, unless the BDCP does all of the following:</p> <p>(A) A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a natural community conservation plan as provided in subdivision (a) of Section 2820 of the Fish and Game Code, and other operational requirements 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.</p> <p>Section 85320(d) states: The potential effects on migratory fish and aquatic resources</p> <p>Section 85320(g) The potential effects of each Delta conveyance alternative on Delta water quality.</p>	The preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP. Significant adverse impacts associated with the California WaterFix Project would still be required to be avoided, minimized, or mitigated to the extent feasible. The proposed project was developed to meet the rigorous standards of the federal and state Endangered Species Acts, as such the proposed project is intended to be environmentally beneficial. By establishing a point of water diversion in the north Delta and new operating criteria to improve water volume, timing, and salinity, the proposed project is designed to improve native fish migratory patterns and allow for greater operational flexibility. Please refer to Master Response 31 for additional information regarding compliance with the Delta Reform Act. By establishing a point of water diversion in the north Delta and new operating criteria to improve water volume, timing, and salinity, the proposed project is designed to improve native fish migratory patterns and habitat conditions and allow for greater operational flexibility.
1764	2	Item of extreme concern:	The health risk assessment presented in the 2015 RDEIR/SDEIS evaluated air quality health risks at receptor

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		<p>"The Brown Administration admits the tunnels would have '52 Significant and Unavoidable Adverse Impacts' on the Delta region, including degraded groundwater quality, long-term reduction of navigation opportunities, and exposure to unhealthy air quality bad enough in Byron to require people to move in order to avoid and increased cancer risk" said RTD Executive Direction Barbara Barrigan-Parrilla. "Hidden deep in the 40,000 page project proposal, and further buried in a footnote (p. 31-13, AQ-13 and fn6), is the news that Byron area children, elderly and people with conditions like asthma will be so threatened by air toxins from the tunnel project that they would have to leave town. What about the thousands of people just up the road in Brentwood and Discovery Bay?"</p>	<p>locations within 3,000 feet of each alternative's construction footprint, which includes receptors located in Brentwood and Discovery Bay. The BAAQMD's guidance recommends evaluating impacts at receptors within 1,000 feet of the project, therefore, this analysis evaluates an even greater number of potentially impacted receptors than recommended by the BAAQMD.</p>
1765	1	<p>The City of West Sacramento (City) appreciates the opportunity to provide these comments on the Bay Delta Conservation Plan (BDCP) Draft Environmental Impact Report/Environmental Impact Statement (DEIR/EIS), and the BDCP (December 13, 2013, Public Review Draft). The Bay Delta Conservation Plan and the accompanying DEIR/EIS provides a blueprint to simultaneously resolve water supply reliability issues for Delta Exporters while addressing ecosystem sustainability issues consistent with the federal and state Endangered Species Acts 111 the Sacramento-San Joaquin Delta (Delta). The City supports rectifying these contrasting objectives but must address its concerns with the BDCP DEIR/EIS in its current form.</p>	<p>The purpose of the proposed project as described in this comment is consistent with Chapter 2, Project Objectives and Purpose and Need, in the Final EIR/EIS.</p> <p>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.</p> <p>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.</p>
1765	2	<p>The implementation of the BDCP raises serious issues to the City of West Sacramento and its water supply reliability. Specifically, it is not clear in any of the documents how the City's water rights and entitlements will be impacted by expanded exporter diversions in light of the Delta's plight and looming climate change predictions. It is unacceptable that the result of this project would be any diminution in the City's water supplies. The documents do not provide adequate assurances that not only the City's water rights and entitlements are protected but also that the water supplies that comprise the basis of these rights and entitlements are also protected. There is a subtle yet paramount correlation - the legal rights are only as good as the water available to supply all the rights. Simply stating that "water rights are protected" is not enough.</p>	<p>See response to comment 1765-1. 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 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.</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> <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>See also Master Responses 25, 26, 28 and 32 regarding upstream reservoir effects, area of origin, operational criteria, and water rights, respectively.</p>

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1765	3	Importantly, the City of West Sacramento water assets are inextricably linked to all other water assets throughout the watershed. As we are witnessing this year, deficient rainfall and storage in the San Joaquin drainage is placing additional water release burdens on the Sacramento drainage to meet Delta regulatory requirements. The current version of the documents fail to address the project operational problems associated with changed climate conditions that could worsen salt water intrusion in the Delta, and reduce precipitation and snowpack statewide. These issues could directly affect the City's water supplies that originate north of the Delta and should be addressed in the documents.	<p>See response to comment 1765-1. 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 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.</p> <p>The No Action Alternative includes reasonable and foreseeable projected conditions for the years 2025 (Early Long Term projection) and 2060 (Late Long Term projection). However, it would be speculative to include future undefined facilities or operations in the No Action Alternative, including agencies' responses to climate change and sea level rise, or future regulatory changes. Future changes in facilities and operations in response to changes in climate and sea level rise also are not included in Alternatives 1 through 9 because they would not be implemented under the Project Objectives and Purpose and Need provisions of the EIR/EIS. However, the comparison of conditions under Alternatives 1 through 9 and under the Existing Conditions and the No Action Alternative are analyzed as incremental differences and not absolute values in the Final EIR/EIS. Therefore, if other future operations were included in the No Action Alternative, they also would be included in Alternatives 1 through 9; and it is anticipated that the incremental differences between alternatives would be similar to those presented in the Final EIR/EIS. See also Master Response 28 regarding operational criteria.</p>
1765	4	The City of West Sacramento is also concerned about new fees and charges that may result from implementation of the BDCP. The City expects that the "beneficiaries pay" principle will be used in assessing costs for the project - both acknowledged costs and unforeseen future costs. The notion that benefits may accrue the same to area of origin water users as they do to export diverters is misplaced. Specifically, assessing costs of ecosystem restoration to in-watershed water users in the same way as assessing costs to water exporters disavows the fundamental problem with the export of water from the Delta - exports permanently remove all exported water from the system unlike uses wholly contained in a watershed of origin. The costs of this permanent water displacement and its environmental impacts should be born accordingly.	See response to comment 1765-1. 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 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 sources of funding.
1765	5	The City of West Sacramento cannot endorse the Bay Delta Conservation Plan or the DEIS/EIR unless there is adequate disclosure of long-term impacts to the water supply reliability of the City. Moreover, the BDCP must provide clear and unambiguous statement of assurance and protections for upstream water rights users from the future whims of the regulatory agencies in light of the project's foreseen and unforeseen environmental impacts. Fees and costs associated with this project and its environmental consequences must be the sole responsibility of the beneficiaries of the project and not tangentially, through broad based ecosystem restoration funds or bonds - on other water users in the state. Exporters must pay the full cost - both economic and environmental - of the deliveries taken out of the Delta watershed for their direct benefit.	<p>See response to comment 1765-1. 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 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. See also Master Responses 25, 26, 28 and 32 regarding upstream reservoir effects, area of origin, operational criteria, and water rights, respectively</p> <p>For costs, funding and further information related to the proposed project, please refer to Master Response 5.</p>
1765	6	The City of West Sacramento is concerned about the proposal to restore at least 5,000 acres of riparian habitat where at least some could be done in Planning Unit 21. It is unclear exactly where this would occur, if it would consume developed and/or developable land, and conflict with planned levee improvements by the West Sacramento Area Flood Control Agency. The City of West Sacramento is designated for growth under the Sacramento Region Blueprint and in our General Plan. Growth in our City is planned in part to preserve agricultural lands and habitat areas beyond our incorporated limits as part of the region's Metropolitan Transportation Plan (MTP)/Sustainable Communities Strategy (SCS). Lastly, the	See response to comment 1765-1. 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 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. See also Master Response 22 regarding mitigation measures and environmental commitments.

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		City supports those comments submitted by the Yolo Natural Heritage Program.	
1766	1	The Cultural Resources Department of the Yocha Dehe Wintun Nation has reviewed the project and concluded that it is within the aboriginal territories of the Yocha Dehe Wintun Nation. Therefore, we have cultural interest in portions of the proposed project area.	<p>The Recirculated DEIR/S (Section 18.2.1.3) was updated to provide information on Section 106 compliance specific to the proposed project. As stated in the RDEIR/S, a Section 106 Programmatic Agreement (PA) is being developed and the USACE will be the lead federal lead agency.</p> <p>The Yocha Dehe Wintun Nation will be invited to consult with the USACE under Section 106 of the National Historic Preservation Act and with DWR in accordance with the Governor's Executive Order B-10-11.</p> <p>For additional information about Native American outreach efforts, including identification and analysis of impacts on archaeological sites, Traditional Cultural Properties, and cultural significance of biological resources, please see Master Response 21.</p>
1766	2	<p>We have several comments in regards to the Bay Delta Conservation Plan. Our original letter sent to the California Department of Water Resources in 2009 did not have comments at that time. However, we would like to note that in the Native American Correspondence section, of Chapter 18, that a "no comment at this time letter" does not equate to "no objection or concern" regarding a project. We have quite a few concerns regarding this project.</p> <p>While initial site visits were conducted in 2009 and later in 2011, local tribes were not invited to participate in these initial survey areas. Archaeologist and survey teams could have benefitted from Tribal knowledge of local landscapes.</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 additional information about Native American outreach efforts, please see Master Response 21. For cultural resources information for the proposed project, please refer to Chapter 18 in the Final EIR/EIS.</p>
1766	3	As is noted in Chapter 18, on page 4 (18-4) of the Draft plan, test excavations will damage any potential archaeological resources and those resources may never again be perfectly restored. Once an alternative is chosen, test excavations in areas impacted by the project will be necessary. We highly recommend that prior to choosing test excavation areas, the archeologist or project engineer contact local tribes to consult regarding the placement of test excavations. We feel that test excavations done outside of the area of potential effect should be kept to a minimum number and that Tribal Monitors should be made a part of this discussion with contractors.	<p>For additional information about Native American outreach efforts, including identification and analysis of impacts on archaeological sites, please see Master Response 21.</p>
1766	4	<p>Currently, the Mitigation Measures in many of the Alternate Plans set up an adversarial dynamic between Project Personnel and Native American groups from the onset. For Example, Alternative 1A (18.3.5.2) with Mitigation Measure CUL 1: Prepare a Data Recovery Plan and perform Data Recovery Excavations, does not include Native American Monitors during excavation or testing. Mitigation Measure CUL- 3: Perform Training with Construction Workers, does not include Native American Monitors as part of the Pre-construction training. Mitigation Measure CUL-5: Consult with Parties regarding the Built Environment, speaks to consultation for the built in environment, but does not include tribes or consulting with parties regarding Archaeological Sites.</p> <p>We believe that Consultation between tribes should be entered into prior to Data Recovery. Essentially, Mitigation Measure CUL- 5 should include more than the built environment and should come at the beginning of the process, rather than at the end.</p> <p>All Mitigation Measures for Alternate plans should encourage Native American tribes to become full partners at the beginning of the process, and at every step until the project is</p>	<p>This comment regarding mitigation and Native American involvement is addressed through the development of a Programmatic Agreement as part of Section 106 consultation. Section 106 was addressed in the Recirculated DEIR/S through the addition of Section 18.2.1.3, which provides information on Section 106 consultation and development of a Programmatic Agreement as part of a phased approach to identifying cultural resources and addressing effects. Native American consultation in the development of the Programmatic Agreement is currently underway.</p> <p>For additional information about Native American outreach efforts, including identification and analysis of impacts on archaeological sites, please see Master Response 21. See also Chapter 18 Cultural Resources, in the Final EIR/EIS.</p>

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		completed. By excluding Native Americans from the process or only including them when Native American remains are discovered, you create an unnecessary dynamic that views Native American tribes as the ones that are going to stop the project, rather than the project being stopped because of project personnel negligence to consult with Native American Tribes prior to the start of the project.	
1766	5	We applaud the Departments of Water Resources attempt to develop an Internal Tribal Engagement Policy and would be willing to open a discussion with DWR as soon as draft documents can be circulated. However, we would like to make sure that project personnel who developed the Principals of Design and Construction for the Bay Delta Conservation Plan also develop a Tribal Advisory Board that would assist in decision making, specifically pertaining to Cultural Resources Protection. The Advisory Board could then work with the Joint Powers Authority to assist in planning the project.	Please see response to comment 1766-2.
1767	1	This letter is intended to provide clarification of our understanding of the Environmental Impact Statement (EIS) for the Bay Delta Conservation Plan (BDCP) as it relates to the U.S. Army Corps of Engineers' Regulatory Programs.	No issues related to the adequacy of the environmental impact analysis in the EIR/S were raised.
1767	2	The Sacramento District recognizes that the Draft EIS for the BDCP is primarily focused on two different proposed federal actions, namely the issuance of permits under Section 10 of the Endangered Species Act by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service and the adoption of operational and other changes to the Central Valley Project by the Bureau of Reclamation. The District further understands the Final EIS is not intended to include a level of analysis sufficient to support permit decisions under Section 404 of the Clean Water Act and Sections 10 and 14 of the Rivers and Harbors Act of 1899 for all actions associated with the BDCP. Rather, the EIS may later be supplemented through additional environmental documentation, if necessary. Furthermore, the District does not expect the BDCP EIS will include an analysis of alternatives that it will rely on to make a determination regarding the "least environmentally damaging practicable alternative" pursuant to the U.S. Environmental Protection Agency's 404(b)(1) Guidelines. Instead, the District will conduct such an analysis once it has received a permit application and additional project-level information.	<p>This comment clarifies the expectations of the Corps for the detail that would have been necessary under the BDCP, and accompanying 2013 Draft EIR/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 and no Section 10 permits under ESA would be obtained if the proposed action is selected. Alternative 4A was developed in response to public and agency input. Federal endangered species are now being addressed through the ESA Section 7 process instead of Section 10.</p> <p>The 2015 RDEIR/SDEIS updated the information expectations for the Corps' permitting processes that would be associated with Alternative 4A. This information has been updated in the FEIR/EIS Appendix 1F Supplemental Information for USACE Permitting Requirements, which provides an overview of the USACE permitting requirements for CWF. The appendix includes an overview of and status of the permitting process for Clean Water Act Section 404, Rivers and Harbor Act Section 10 and Section 14 (Section 408), National Historic Preservation Act Section 106, and Executive order 11988. As described in the appendix, the lead agencies recognize that additional steps will be required in addition to completing the FEIR/EIS to satisfy these permitting requirements.</p>
1767	3	The District is committed to further assisting the BDCP lead agencies in the development of an EIS that serves the needs of the BDCP parties. We will continue to work with the lead agencies regarding such issues as impacts of the BDCP to navigation, federal flood control and navigation projects, and waters of the United States, including wetlands.	The Lead Agencies appreciate the District's involvement in the planning process as well as the commitment to stay involved moving forward.
1768	1	The San Francisco Building and Construction Trades Council, since 1896 the umbrella organization for the City's construction labor unions and the representative of many thousands of working men and women, supports the Bay Delta Conservation Plan (BDCP).  It would be obvious -- facile, in fact -- to attribute our support to the many jobs that the BDCP will bring to our sisters and brothers.	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 an HCP. Alternative 4A has been developed in response to public and agency input. 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.
1768	2	We [the San Francisco Building and Construction Trades Council] recognize also that the supply of water from parts of the state relatively well-supplied to parts much less so is critical to the general well-being of all Californians, but that at the same time that this must be achieved in a way that does not harm the environment. We love our Bay and celebrate	The project aims to allow the federal and state water projects to deliver more reliable water supplies, in a way less harmful to fish. The plan does not increase the amount of water to which DWR holds water rights or for use as allowed under its contracts. It is projected that water deliveries from the federal and state water projects under a fully-implemented project would be about the same as the average annual amount

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		<p>the gradual improvement of its water quality over the years. Some of us live along the Delta's waterways; others of us depend on them for respite from arduous work. Many of us -- myself included -- are avid anglers. We believe that the current Delta water system, with its massive fish kills, should no longer be tolerated.</p>	<p>diverted in the last 20 years. Refer to the following Master Responses: 3 (Purpose and Need), 5 (Conservation Measure 1 as a CM, Overview of Restoration and Enhancement Activities), 17 (Striped Bass), and 24 (Delta as a Place). Fisheries are analyzed in Chapter 15 of the Draft EIR/EIS and in Sections 3, 4, 5 and in Appendix A (Chapter 15) of the RDEIR/SDEIS.</p>
1768	3	<p>We [the San Francisco Building and Construction Trades Council] see the BDCP as a real opportunity to reboot, to provide both jobs and the water that is necessary to the state's general prosperity and at the same time to craft a system that is a great improvement over the current one in terms of its effects on fish and wildlife.</p>	<p>Please note that the preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP. 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/S.</p>
1769	1	<p>On behalf of the Fresno Madera Kings and Tulare Building Trades membership and working families we endorse the Bay Delta Conservation Plan (BDCP). We agree with the BDCP's dual goals of restoring the ecological health of the Bay Delta and securing a reliable water supply for 22 million Californians.</p> <p>Our region's economy has suffered immensely because of a lack of water certainty and reliability, which affects our members, and more importantly the communities where we live and work. Water is the lifeblood of our economy, and we must work together to ensure California's prosperity and environmental wellbeing.</p> <p>Furthermore, infrastructure investment and rebuilding California's water conveyance system will spur job creation in Central California which will improve our region's economy.</p> <p>Please approve this plan so California can restore the ecology of the Bay Delta region and provide fresh water to communities throughout California.</p>	<p>The preferred alternative is now Alternative 4A (i.e., the California WaterFix Project) and no longer includes an HCP. The environmental documentation and project approval will be acted on by the decision makers from each lead agency at the conclusion of the CEQA and NEPA processes.</p>