

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
1181	1	<p>The Merced County Board of Supervisors would like to reiterate its concern and opposition to the Amendment to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and Draft Revised Substitute Environmental Document (SED), which poses unreasonable threats to communities throughout the Central Valley.</p> <p>The proposal to increase unimpaired flows to 40 percent along the Merced, Stanislaus and Tuolumne rivers would bring a devastating blow to Merced County's economy, groundwater quality and public safety.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please refer to the section on Service Providers for a general response to a health and safety comments. Please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, for a discussion of economic impacts. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, Master Response 2.7, Disadvantaged Communities, and Master Response 3.6, Service Providers for responses to comments about water supply for public health and safety and the Human Right to Water. Please see Master Response 3.4, Sustainable Groundwater Management Act and Groundwater, for responses to general comments regarding groundwater resources.</p>
1181	2	<p>Under the proposed SED, our region and these disadvantaged communities are facing an even bleaker outlook. While the SED's economic analysis shows an economic impact of 433 job losses and \$64 million impact to the regional economy over three counties, two other independent economic analyses show that the SED dramatically underestimates the economic impacts. These independent analyses show approximately 900 jobs lost in Merced County alone and economic impacts closer to \$231 million. According to Stratecon Inc.'s economic analysis, which is enclosed with this letter for your review, San Joaquin, Stanislaus, and Merced counties could be facing long term impacts of \$7 billion dollars over the next 50 years, should this proposed action be implemented.</p>	<p>Please see Master Response 2.7, Disadvantaged Communities, for information regarding disadvantaged communities and water supply. Please see Master Response 8.2, Regional Agricultural Economic Effects, regarding the State Water Board's evaluation of potential regional economic effects associated with change(s) in agricultural production, and a discussion on surface water supply reliability. As discussed in Master Response 8.2, while the 2016 Recirculated Draft SED's analyses and conclusions differ from the commenters, the SED's analysis are supported by reasonable assumptions, substantial evidence, and an appropriate level of analysis for considering economic effects. To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p>
1181	3	<p>Over the past year, our water management agencies in the Merced Groundwater Subbasin, a high- priority, critically overdraft basin, have come together to address these issues under the State's Sustainable Groundwater Management Act (SGMA). However, the SED neglects to take into consideration the impacts this proposal will have on a groundwater subbasin already implementing SGMA. Should the SED be implemented as proposed, the capacity for surface water recharge, one of the most important tools for achieving sustainable groundwater management, would be enormously reduced. All for the benefit of what the SED identifies as the production of 1,100 fish. For the State to require groundwater protection measures, then restrict the main resource we have to come into compliance with those requirements, poses severe complications.</p>	<p>The State Board Water appreciates the efforts that water management agencies in the Merced subbasin have made to comply with SGMA. The groundwater overdraft conditions in the Merced subbasin are legacy issues caused by unsustainable agricultural expansion; SGMA was passed by the legislature in 2014 to address overdraft issues. The State Water Board acknowledges that it will be challenging, but SGMA compliance cannot occur at the expense of reasonably protecting surface water beneficial uses; both groundwater and surface water must be protected. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA. Comprehensively addressing both resources allows for integrated planning that does not trade impacts between surface water and groundwater.</p> <p>For further discussion on groundwater overdraft as a legacy issue, groundwater recharge, and compliance with SGMA in the context of the plan amendments, please see Master Response 3.4, Groundwater Resources and the Sustainable Groundwater Management Act.</p> <p>See Master Response 3.1, Fish Protection regarding SalSim.</p>
1181	4	<p>As proposed, the SED would cost our local economy millions of dollars, reduce job opportunities and threaten the resources that support educational opportunities in our area. It is well known that there is a correlation between unemployment and crime. The prospect of losing 900 jobs in Merced County would be an unprecedented blow to our quality of life standards. Just as troubling is this plan's threat to our economy and the unquestionable impact to County revenues that go toward funding public safety services. Not only would this proposal reduce quality of life in our area and increase criminal activity, it would pull away the very resources we have to combat those issues.</p>	<p>Please see response to comment 1181-2 regarding potential economic effects.</p>
1181	5	<p>The health of the Delta estuary requires a comprehensive solution. Water quality improvements in the Delta and the health of the salmon population should not rest solely on San Joaquin River tributaries. Increased river flows are not the exclusive solution. What we need are restored river habitats and control over predatory fish along our rivers. More than 90 percent of outgoing juvenile salmon are consumed by predatory fish before they</p>	<p>Please refer to Master Response 3.1, Fish Protection, for discussion of predation. Also refer to the SED's Appendix C, Section 3, Scientific Basis for Developing Alternate San Joaquin River Flow Objectives, and to Master Response 5.2, Incorporation of Non-Flow Measures and Non-Flow Measure Analyses, for discussions of non-flow measures. As explained in those sections, it is not within the State Water Board's authority to perform non-flow related mitigation options. The final Program of Implementation will include</p>

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		reach the San Joaquin River. Unfortunately, this report fails to strike a suitable balance regarding the issues it professes to address.	recommendations to other agencies to take additional actions outside of the State Water Board’s purview to protect SJR fish and wildlife beneficial uses. Those actions will include non-flow activities including, but not limited to: habitat restoration (floodplain restoration, gravel enhancement, riparian vegetation management, passage, etc.), hatchery management, predator control, water quality measures, ocean/riverine harvest measures, recommendations for changes to flood control curves, and barrier operations.
1181	6	<p>You heard loud and clear from our residents during your December 19, 2016 public hearing in Merced. A diverse group spoke to you about the negative impacts this proposal would have on agriculture, educational institutions, public safety, the local economy and environmental health.</p> <p>Even with the last-minute public hearings in December and January, it is clear that input from the Central Valley has not been a high priority in the SED's release. Due to the severe implications of such a proposal, stakeholders should have been consulted prior to its development, as was requested by local agencies during the three years prior to the release. By only allowing stakeholders to comment on the plan after its release, you preempted our region from providing valuable information and insight that your technical experts and scientists could have used to create a plan that more appropriately balanced benefits and impacts. It is unfortunate that this did not happen.</p> <p>However, this situation can be corrected. The Merced County Board of Supervisors urges your Board to give consideration to this community and many others by revising the current plan to better reflect the needs of all involved parties.</p>	Please see Master Response 1.1, General Comments, regarding the public outreach process.
1181	7	[ATT 1: Same as Attachment 2 from letter 1176 – San Joaquin County. “The Economic Consequences of the Proposed Flow Objective for the Lower San Joaquin River in Merced, San Joaquin and Stanislaus Counties” By Rodney T. Smith, Ph.D. President, Stratecon Inc. and Jason M. Bass, CPA, CFA, Founder and Principal, EcoGlobal Natural Resources. Prepared for the Counties of Merced, San Joaquin and Stanislaus. January 6, 2017]	Please see Master Response 8.2, Regional Agricultural Economic Effects, regarding the State Water Board’s evaluation of potential regional economic effects associated with change(s) in agricultural production, and a discussion on surface water supply reliability. As discussed in Master Response 8.2, while the 2016 Recirculated Draft SED’s analyses and conclusions differ from the commenters, the SED’s analysis are supported by reasonable assumptions, substantial evidence, and an appropriate level of analysis for considering economic effects. Responses to comments provided in the Stratecon Inc. Report referenced are provided in letter 1176.
1182	1	It's apparent that fish and wildlife beneficial uses are not being met in the Stanislaus, Tuolumne, and Merced Rivers. Based upon extensive dialogue our Center's [Central Sierra Environmental Resource Center] staff has had with biologists and other specialists with state and federal wildlife agencies, it is clear that flows in the three rivers will provide more optimum conditions for salmonid populations as well as other aquatic species, if the flows mimic the natural hydrographic conditions (e.g., relative magnitude, duration, timing, and spatial extent of flows) of the basin that native fish species and other species have adapted to.	Please see Master Response 1.1, General Comments, regarding general comments in support or opposition to the plan amendments. Additionally, as explained in Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, the overwhelming body of evidence demonstrates that increased and more variable flow is the foundation for the survival of fish. Please also refer to Master Response 3.1, Fish Protection, for additional information.
1182	2	Our Center [Central Sierra Environmental Resource Center] agrees with the SWB's suggestion that a decision to increase the unimpaired flow, by itself, will not lead to a successful native fish recovery in the LSJR basin. Our Center agrees with the SWB recommendation that non-flow actions, in addition to increasing unimpaired flows, will be necessary to better achieve viable populations of native fish in the LSJR basin. CSERC agrees with all the non-flow measures described in the DSED (Appendix K) including restoration and protection of floodplain and riparian habitat, reduction of vegetation disturbing activities (e.g., grazing, spraying, mowing), maintaining coarse sediment/gravel critical for	Please see Master Response 1.1, General Comments, for responses to comments that do not make a general comment regarding the plan amendments or raise significant environmental issues.

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		<p>successful spawning and rearing, enhancing in-channel complexity through addition of instream structures (e.g., woody debris, boulders), improvement of reservoir operations to maintain adequate water temperature conditions, improvement of fish passage above dams and improvement of fish and water barrier programs, reduction of predation and competition by non-native fish, and reduction of aquatic invasive species. River ecosystem improvements within the three rivers, in addition to flow, will better provide more suitable habitat for salmonid spawning and rearing, and also provide salmonids and other native fish a higher probability of population vitality into the future.</p> <p>In particular, an aggressive program of floodplain restoration and floodplain access work could significantly enhance the growth rate and potentially the survival of juvenile salmonid species in the Merced, Tuolumne, Stanislaus, and other rivers of the State.</p>	
1182	3	<p>Staff from our Center provided oral comments at the Stockton and Modesto hearings held by the State Water Board (SWB) in December of 2016 regarding the proposed amendments to the 2006 Bay-Delta Water Quality Control Plan in regards to flow objectives for LSJR's three major salmon-bearing tributaries. Listening to the presentations provided by water districts that hold a stake in the waters flowing (or not flowing) from these three rivers, it is clear that these agencies are narrowly focused on a goal to procure as much water from these three rivers as they see fit, and that the lack of beneficial uses currently being extended to salmon and other native fish and wildlife are of minimal consequence to these agencies.</p> <p>As all California's residents have been asked to do in the past several years, water districts should be pressed and directed to manage for a high degree of water conservation just as the rest of the state has been forced to do from the drought. Unbounded water consumption, as was the norm in our states history, is no longer feasible; we must all do our part to minimize consumption, waste, and entitlement over our precious water resources, and that would include water districts.</p>	<p>According to the Executive Summary, the plan amendments will significantly increase flows during the February–June salmon outmigration period, compared to the current condition. The State Water Board does not specify the actual means by which other entities choose to comply with the plan amendments. (See, e.g., Cal. Wat. Code, § 13360, subd. (a).) Please refer to Chapter 16, Evaluation of Other Indirect and Additional Actions, for more information regarding other indirect actions that could be taken in response to the plan amendments.</p> <p>Other state planning efforts include requirements to increase water conservation: SBX7-7 (i.e., the water conservation bill passed as part of the 2009 Comprehensive Water Package) requires urban and agricultural water suppliers to increase water use efficiency.</p> <p>Please see Chapter 22, Integrated Discussion of Potential Municipal and Domestic Water Supply Management Options, for additional information regarding potential municipal and domestic water supply management options in response to the plan amendments.</p>
1182	4	<p>Though our Center [Central Sierra Environmental Resource Center] strongly prefers that the SWB would take strong actions to safeguard the protection of salmonids in the Stanislaus, Tuolumne, and Merced Rivers by approving 50-60 percent of unimpaired flow (Alternative 4) as the appropriate long-term strategy, but we recognize the political and economic rationale for the SWB proposal to increase unimpaired flows for salmonids during important rearing and outmigration period (February through June) in the Stanislaus, Tuolumne, and Merced Rivers at their confluences with the LSJR to a less controversial 40 percent as the starting point (Alternative 3). That 40 percent flow level should be the middle ground starting point, and then if non-flow measure can be sufficiently implemented to significantly enhance benefits for salmon and water quality, downward reductions might then be considered. No matter what the flow level, our Center strongly urges the SWB to require non-flow measures within the three rivers regardless of the unimpaired flow alternative chosen.</p>	<p>Please refer to Master Response 3.1, Fish Protection for a discussion regarding the scientific justification for the LSJR flow objective.</p>
1182	5	<p>LSJR Alternative 1: LSJR Alternative 1 will do little to contribute to salmonid recovery in the LSJR, Stanislaus, Tuolumne, and Merced Rivers, but will allow the continued removal of the vast majority of natural flow amounts to be diverted out of the three major tributaries to the LSJR. Our Center [Central Sierra Environmental Resource Center] opposes LSJR Alternative 1, which would allow the continuation of the current flow requirements for LSJR (or the lack thereof) in the Water Quality Control Plan adopted in 2006. Presently, flows left</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues and for responses related to support or opposition of various LSJR alternatives evaluated in the SED.</p> <p>LSJR Alternative 1 is the No Project Alternative. The purpose of describing a No Project Alternative is to “allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.” (Cal. Code Regs., tit. 14, § 15126.6(e)(1).) Please refer to Master Response</p>

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		<p>in the Stanislaus, Tuolumne, and Merced Rivers below New Melones, Don Pedro, and Lake McClure, respectively, are often less than 20 percent of unimpaired (i.e., natural) flows. The current flow objectives in the Bay-Delta Plan for February-June depend on month and water year classification, which admittedly "does not reflect the frequency, timing, magnitude, and duration of natural flows" (DSED, p. ES-12). As a result, native fish species within the three rivers and the LSJR are declining and being replaced by non-native species. Historically, the LSJR basin supported Central Valley spring-run, fall-run, and potentially late fall-run Chinook salmon. Now what remains of Chinook populations in the LSJR basin (only fall-run) are at a very high risk of local extinction (Mesick 2009, 2010a, 2010b), and are in a steeper decline than in any other tributaries of the Sacramento or San Joaquin Rivers (DSED, p. 19-3 and Fig. 19-1).</p>	<p>2.5, Baseline and No Project, for additional information regarding the No Project Alternative.</p> <p>LSJR Alternatives 2, 3, and 4 evaluate increasing ranges of unimpaired flows for the February-June period. Please refer to Appendix C and Chapter 19 regarding the anticipated benefits from providing a higher and more variable flow regime. Please also refer to Master Response 3.1, Fish Protection, for more information regarding the adequacy of the plan amendments for providing fish protection, and the anticipated conditions favoring native fish over non-natives.</p>
1182	6	<p>LSJR Alternative 2: The proposed plan direction of LSJR Alternative 2 will not provide sufficient river flows that will contribute to salmonid recovery in the LSJR and its three major tributaries. Our Center [Central Sierra Environmental Resource Center] opposes LSJR Alternative 2 because this alternative would more or less continue the status quo -- providing only 20-30 percent unimpaired flows between February and June in the three rivers at their confluences with the LSJR. Even worse, this alternative would only require leaving 20 percent unimpaired flows in the three rivers as the starting point. This alternative is really no different from existing conditions in the basin. In addition, SalSim modeling results presented in the DSED suggest unimpaired flows < 30 percent will have very little positive impact on adult salmonid production in the LSJR tributaries, and therefore Alternative 2 would not enhance fish and wildlife beneficial uses in the basin.</p>	<p>Please see Master Response 1.1 for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please see Master Response 1.1 for responses to comments that generally oppose the plan amendments, a specific percent of unimpaired flow, or an LSJR alternative. Please see Master Response 3.1, Fish Protection, for a discussion of SalSIM.</p>
1182	7	<p>LSJR Alternative 3 and 4: Our Center's [Central Sierra Environmental Resource Center] staff and the members who support us would collectively prefer to have a very high percentage of unimpaired flows required to be left in the three rivers. CSERC is in favor of LSJR Alternative 4, which would require 50-60 percent unimpaired flows from February-June, with 50 percent as the starting point. The 2010 Flow Criteria Report determined that approximately 60 percent of unimpaired flow at Vernalis February-June would be fully protective of fish and wildlife beneficial uses in the Stanislaus, Tuolumne, and Merced Rivers, and the LSJR when considering flow alone (DSED, p. ES-15). But because our Center also recognizes that the limited water resources in Central California are precious for so many social and economic reasons, as well as environmental values, we agree with the SWB that there are many beneficial uses (environmental, social, economical) to consider (17 beneficial uses under the Bay-Delta Plan, DSED Appendix K, p. 10). This is why our Center, rather than stridently advocating for LSJR Alternative 4, is in reluctant agreement with the SWB's proposal to approve LSJR Alternative 3-- which would provide 30-50 percent unimpaired flows from February-June in the Stanislaus, Tuolumne, and Merced Rivers, with 40 percent as the starting point. But this support for Alternative 3 is tied to assurance that non-flow measures or actions will be mandated within the three rivers in addition to the unimpaired flow requirement of 30-50 percent. These non-flow measures should include, but not be limited to, restoration and protection of floodplain and riparian habitat, reduction of vegetation disturbing activities (e.g., grazing, spraying, mowing), maintaining coarse sediment for spawning and rearing, enhancing in-channel complexity through addition of instream structures (e.g., woody debris, boulders), improvement of reservoir operations to maintain adequate water temperature conditions, improvement of fish passage above dams, reduction of predation and competition by non-native fish, and reduction of aquatic invasive species.</p>	<p>Please see Master Response 1.1 for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please see Master Response 1.1 for responses to comments that generally oppose or support the plan amendments, a specific percent of unimpaired flow, or an LSJR alternative. Please see Master Response 5.1, Incorporation of Non-Flow Measures, regarding non-flow measures identified in the plan amendments.</p>

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1182	8	Alternative Flow Objectives Benefits/Impacts - Salmonids: CSERC [Central Sierra Environmental Resource Center] strongly agrees with statements made in the DSED that the preferred LSJR Alternative 3, as well as LSJR Alternative 4, would have positive benefits salmonids. Increased unimpaired flows will inherently have a positive impact on physical, chemical, and biological factors (e.g., decreased water temperatures, increased dissolved oxygen levels, decreased siltation settling on river bottom, increased benthic macroinvertebrate diversity, increased floodplain habitat, increased backwater and wetland habitat, and increased riparian habitat and corridors). These positive enhancements to the LSJR basin ecosystem will in turn lead to improvements in salmonid escapement, spawning, egg incubation, juvenile growth, smoltification, and juvenile emigration, and would also reduce the risk of disease, predation, and competition with warmwater non- native fish species. In addition to salmon and other aquatic organisms, terrestrial wildlife will also benefit from increased river and riparian productivity.	Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues associated with the analysis contained within the SED or request a modification to the plan amendments.
1182	9	Alternative Flow Objectives Benefits/Impacts - Terrestrial biological resources: CSERC [Central Sierra Environmental Resource Center] agrees with statements made in the DSED that the preferred LSJR Alternative 3 would have less-than-significant impacts on terrestrial biological resources. Our Center acknowledges that in the short term increased flood inundation and increased flows will shift the location of the riparian corridors and wetlands within the river floodplain footprint, but bringing back the natural hydrographic conditions to the three rivers will increase wetland and riparian acreage that has been lost in the last century. CDFW (2014a) is cited in Chapter 8 stating that roughly, only 10 percent of the historical wet land acreage and less than 2 percent of the historical riparian acreage now remains in the San Joaquin valley. In addition, invasive plants have replaced most native species along the three rivers, and that plant communities are highly disturbed by cultivation, grazing, and development (CDFG 2007; USBR 2011b). Returning wetland and riparian habitats will increase resiliency of natural vegetation like cottonwoods, alders, elders, ash, willows, and sedges. Thereby creating more habitat for native wildlife including Swainson's hawk, osprey, longhorn elderberry beetle, western pond turtle, California tiger salamander, California red-legged frog, garter snake, river otter, muskrat, beaver, and coyote. Such ecological benefits may also make river habitat less available for invasive species like American bullfrog, red swamp crayfish, red-eared slider, European snails, and Chinese mitten crab.	The commenter identifies beneficial effects on terrestrial resources under LSJR Alternative 3. The information presented by the commenter does not contradict information contained in Chapter 8, Terrestrial Biological Resources. Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.
1182	10	Alternative Flow Objectives Benefits/Impacts - Groundwater resources: CSERC [Central Sierra Environmental Resource Center] does not agree with statements made in the DSED regarding the potential significant and unavoidable negative impacts of LSJR 3 to groundwater resources. The DSED states that LSJR Alternative 3 and 4 could reduce average annual groundwater balance by more than the equivalent of one inch in the three subbasins (Modesto, Turlock, and Extended Merced), cause a measurable decrease in groundwater elevations, and thereby have a significant and unavoidable depletion of groundwater supplies or interfere with groundwater recharge. In actuality, increasing unimpaired flows would result in groundwater recharge through soil percolation (DSED p. 9- 14). Surface water diversion depletes groundwater resources. Returning the LSJR tributaries to more natural hydrographic conditions does not deplete groundwater resources. However, the impact analysis in the DSED asserts that increasing unimpaired flow levels to levels suggested in LSJR Alternative 3 or LSJR Alternative 4 will significantly impact groundwater resources because both irrigation districts and public water suppliers are expected to pump even higher levels of groundwater that will "be needed" to replace the loss of water	Increasing in-stream flows in the rivers will likely increase natural groundwater recharge in the plan area. However, as discussed in Appendix G, Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results, Section G.3.3 Change in Net Subbasin Inputs, the volume of recharge from increases in flow is small compared to the reduction in recharge from applied surface water and the potential increase in groundwater pumping that could occur if water users choose to pump more groundwater when less surface water is available. The Sustainable Groundwater Management Act (SGMA) was passed by the legislature in 2014 to address overdraft issues and regulate groundwater pumping as a separate and distinct process from the water quality control planning process initiated by the State Water Board. Groundwater sustainability agencies (GSAs) have 20 years to achieve sustainability. SGMA gives GSAs many tools, including the authority to regulate groundwater extractions (Wat. Code, § 10726.4, subdv. a). SGMA does not dictate which tools GSAs use to balance basins. Rather, GSAs will define sustainability at the local level, based on the needs of the beneficial uses and users of groundwater in each basin, and choose an appropriate set of tools to achieve their sustainability goal. Future GSPs will have to account for the amount of surface water available in

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		<p>diversions.</p> <p>Because of the California's Sustainable Groundwater Management Act (SGMA,2014), regardless of which alternative is ultimately chosen, waters users will have an obligation to ensure that there will not be unreasonable redirected impacts to groundwater resources (DSED, Appendix K p. 28). Therefore:</p> <p>As part of the final SED, it would be important for the SWB to describe options for accomplishing both anticipated unimpaired flow objectives (30 to 50 percent unimpaired flow) while ensuring no unreasonable impacts to groundwater resources occur. While not likely to be politically popular, such strategies might include state approval of stronger restrictions against unregulated pumping or other actions to simultaneously improve the health and sustainability of the region's rivers while also restricting over-drafting of groundwater resources in the region.</p> <p>Since many of the groundwater aquifers in this region are currently considered to be highly over-drafted including the Eastern San Joaquin, Turlock, and Merced sub-basins, CSERC asserts that irrigation districts and public water suppliers should not be allowed to pump groundwater from over-drafted sub-basins at rates far above sustainable levels. As part of the overall management direction of water by the SWB, groundwater drafting should be addressed at the same time as the SWB approves a long-term management plan to enhance and restore the health of the three rivers, the LSJR, and the delta.</p> <p>More descriptive language should be provided in the impact analysis chapter of the final SED that explains how the SWB will go ahead with increasing unimpaired flows while not allowing irrigation districts and public water suppliers from unreasonable redirected impacts to groundwater resources.</p>	<p>accordance with all relevant water regulations, including the proposed plan amendments.</p> <p>Chapter 9, Groundwater Resources, Section 9.4.3, Impacts and Mitigation Measures, explains that under SGMA, state intervention depends on specific deadlines, and is only triggered if local agencies are unwilling or unable to manage their groundwater sustainably. State Water Board mitigation to protect groundwater basins from the indirect impacts of the LSJR alternatives is infeasible at this time, because SGMA deadlines for state intervention are still prospective. However, mitigation under local authorities is feasible through SGMA.</p> <p>For further discussion on SGMA in the context of the plan amendments, please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act.</p> <p>Please see Master Response 1.1, General Comments, for a discussion regarding the scope of the SED and the requirements of CEQA for program-level review.</p>
1182	11	<p>Alternative Flow Objectives Benefits/Impacts - Climate change: Our Center [Central Sierra Environmental Resource Center] does not agree with the statements made in the DSED regarding the significant and unavoidable impacts of increasing unimpaired flows in the LSJR tributaries contributing to climate change. The impacts of LSJR Alternative 3 and LSJR Alternative 4 to climate change are incorrectly predicted to 1) generate GHG emissions and "exceed the 10,000 MT CO2e threshold"; and 2) conflict with a plan, policy, or regulation adopted for reducing emissions, related to the reduction in hydropower and increased groundwater pumping that would potentially have to occur to replace the lost surface water diversions. If instead of the state allowing a significant increase in groundwater pumping, the SWB could require limits that would protect groundwater and reduce any potential for increased greenhouse gas emissions. According to CDWR's Climate Change Handbook for Regional Water Planning (2011), enhancement of floodplains, anadromous fish, and species migration should be included in resource management strategies to mitigate the predicted impacts of climate change to surface waters and groundwater resources in the region. Therefore, moving forward with Alternative 3 and increasing unimpaired flows to 40 percent, as a starting point would align with the DWR's suggested mitigation actions and resource management strategies.</p>	<p>Alternatives were developed to meet the purposes and goals of the State Water Board to amend the Water Quality Control Plan. Refer to Master Response 1.1, General Comments, and 2.4, Alternatives to the Water Quality Control Plan Amendments, for further information on the plan amendments' purposes and goals and alternatives development. Please refer to Master Response 3.4, Sustainable Groundwater Management Act and Groundwater, regarding the State Water Board's role with respect to groundwater. Please see Master Response 3.7, Greenhouse Gas Emissions and Analysis, regarding quantifying GHG emissions and the scope and approach of the GHG analysis in Chapter 14, Energy and Greenhouse Gases.</p>
1182	12	<p>Base Flows: CSERC [Central Sierra Environmental Resource Center] agrees with the proposed establishment of a base flow requirement for Vernalis from February-June. The February-June Vernalis base flow requirements are especially pertinent in critically dry years to reasonably protect fish and wildlife beneficial uses. CSERC requests that the final SED describe the criteria for determining why base flow requirements for Vernalis from</p>	<p>Please see Master Response 3.1, Fish Protection, for information regarding the baseflow requirement at Vernalis. In addition, the State Water Board strived to use the best available science throughout the preparation of the SED. A variety of data were obtained including quantitative data from peer-reviewed published literature on topics specific to the plan area; unpublished quantitative data from within the plan</p>

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		<p>February-June would be between 800 and 1,200 cfs regardless of water year.</p> <p>This analysis should describe the best available scientific information that is being used to determine the base flow criteria included in the DSED.</p>	<p>area; and qualitative data or personal communications with topical experts.</p>
1182	13	<p>Adaptive Implementation: CSERC [Central Sierra Environmental Resource Center] is in agreement with the DSED proposal that a portion of the February-June flows could be (1) shifted to other months, (2) shifted to any percent within the adaptive range, and (3) maintain a certain base flow at Vernalis to avoid adverse temperature impacts on fish and wildlife. Our Center strongly agrees with taking actions in dry years (when there is insufficient water availability) to best attempt to achieve temperature criteria in the summer and fall seasons in the basin. In addition, in above normal or very wet years, when there is excess water supply at the end of the year, the SWB could provide management incentives to irrigation districts for maintaining excess reservoir carryover, if subsequent water years are predicted to be dry or critically dry years, to be available for irrigation district purposes or salmon purposes.</p>	<p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding adaptive management and the bounds under which it may proceed.</p> <p>Adaptive Implementation allows approval of multiple years of adaptive implementation. This provision allows the irrigation districts, working with fish agencies and others, to propose and implement alternative operations as this comment proposes. For example, in wet years the required percent of unimpaired flow could be reduced to 35 percent so long as the flow is maintained at something higher than 40 percent in dry years.</p>
1182	14	<p>Biological Goals: CSERC [Central Sierra Environmental Resource Center] is in agreement with the DSED's biological goals as indicators of Chinook salmon and Central Valley steelhead population viability, including: abundance; productivity as measured by population growth rate (e.g., quality and quantity of spawning and rearing habitat, fry production, juvenile outmigrant survival to the confluence of tributary and LSJR); genetic and life history diversity; and population spatial extent, distribution, and structure (DSED Appendix K, p. 33). Our Center urges the SWB to emphasize in the Final SED that a select number of the indicators of viability should be monitored and reported annually by the appropriate agency in order to assure that the best available information on salmonids in the LSJR and its tributaries.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p> <p>Please also see Master Response 2.2, Adaptive Implementation, regarding the proposed adaptive implementation process, including the development of biological objectives and metrics for measuring progress toward objectives.</p> <p>Please note that Chapter 14, Energy and Greenhouse Gases of the SED has been revised to include a discussion of resource management strategies to reduce described impacts of climate change to surface waters and groundwater resources in the region and now includes a reference to the Climate Change Handbook for Regional Water Planning (DWR 2011). However, the full effects of these types of resource management strategies to reduce CO2e emissions generated is unknowable because it is unknown the type, number, and location of resource management strategies that could be performed during implementation of the plan amendments. As such, the addition of this information to Chapter 14 does not materially change the significance determinations. See Response #9 above regarding potential groundwater pumping in response to implementation of the plan amendments.</p>
1182	15	<p>Long-term Biological Objectives and Monitoring: California lacks ecosystem-wide species drought resilience and recovery plans for its surface waters (Mount et al. 2016), but instead conducts long-term monitoring for a few at-risk species (e.g., salmonids) and reacts to environmental emergencies after much of the damage to biological and ecological functions have already occurred. In another drought-stricken area of the world, Australia's current water management system (under the Victorian Model) includes ecosystem-wide management objectives in place for surface waters regardless of the water-year type (e.g., wet, average, dry, drought). In a (1) drought year, the main objective is to protect species by avoiding critical loss, maintain key refuges, and avoiding catastrophic events; (2) in a dry year the main objective is to maintain river function and of key wetlands; (3) in an average water year the main objective is to recover by improving ecological health and improve recruitment for key animal and plant species; and (4) in a wet year the main objective is to enhance species by restoration of floodplain and wetland linkages and enhancing recruitment for key animal and plant species (Mount et al. 2016).</p> <p>The final SED should articulate long-term objectives and monitoring methods for each kind of water-year (e.g., drought, dry, average, wet) to either protect (drought years), maintain</p>	<p>Please refer to Master Response 2.2 regarding proposed adaptive implementation process, including the development of biological objectives and metrics for measuring progress toward objectives.</p>

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		(dry years), recover (average water years), or enhance (wet years), for the viability of not only salmonids in the LSJR basin, but also other animal and plant species that are critical for river vitality in the LSJR and the LSJR tributaries. This would create a robust and transparent policy framework for water managers to make decisions on water usage for all water conditions, like that which was established in Australia (Mount et al. 2016).	
1182	16	Who should be monitoring flow requirements and associated biological goals: The DSED states the STM Working Group will be established to assist in implementation, monitoring, and assessment of flow objectives and biological goals. The group will be comprised of DWR, NMFS, USFWS, and water users on the Stanislaus, Tuolumne, and Merced Rivers. However, this amount of involvement might make monitoring and assessment difficult. Our Center [Central Sierra Environmental Resource Center] asks that the SWB consider having a coalition of interested stakeholders, like those suggested to be in the STMWG, to nominate 1-2 fisheries and hydrology-related experts to manage the monitoring and analysis of biological goals and non-flow actions, and ensure that these individuals also provide oversight for stakeholder responsibilities as they pertain to the flow objectives.	Please see Master Response 1.2, Water Quality Control Planning Process and Master Response 2.1, Amendments to the Water Quality Control Plan regarding implementation and the STM Working Group membership.
1182	17	CSERC [Central Sierra Environmental Resource Center] would be supportive if the State Water Board approved a plan for requiring 50-60 percent of unimpaired flow to be left in the river (LSJR Alternative 4) as the appropriate long-term strategy for best managing the Stanislaus Tuolumne, and Merced Rivers in order to improve habitat for salmonids, improve the ecological condition of those three tributaries to the Lower San Joaquin River and the health of the basin and Delta. But our Center also recognizes that the limited water resources in Central California are precious for so many social and economic reasons, as well as environmental values, we agree with the SWB that there are many environmental, social, economical beneficial uses to consider. This is why our Center, rather than advocating for LSJR Alternative 4, is in reluctant agreement with the SWB's proposal to approve LSJR Alternative 3 -- which would 30-50 percent unimpaired flows from February-June in the Stanislaus, Tuolumne, and Merced Rivers, with 40 percent as the starting point. But this is with the understanding that non-flow actions will be mandated within the three rivers in addition to the unimpaired flow requirement. These non-flow measures should include, but not limited to, restoration and protection of floodplain and riparian habitat, reduction of vegetation disturbing activities (e.g., grazing, spraying, mowing), maintaining coarse sediment for spawning and rearing, enhancing in-channel complexity through addition of instream structures (e.g., woody debris, boulders), improvement of reservoir operations to maintain adequate water temperature conditions, improvement of fish passage above dams, reduction of predation and competition by non-native fish, and reduction of aquatic invasive species.	Please see response to comment 1182-7.
1182	18	<p>We [Central Sierra Environmental Resource Center] urge the SWB to address the following in the Final SED:</p> <ul style="list-style-type: none"> • Describe the criteria for determining why base flow requirements for Vernalis from February-June would be between 800 and 1,200 cfs regardless of water year. This analysis should describe the best available scientific information that is being used to determine the base flow criteria. • Emphasize that a select number of the indicators of viability should be monitored and reported annually by the appropriate agency. • Consider having a coalition of interested stakeholders, like STMWG, nominate 1-2 fisheries 	Please refer to Master Response 3.3, Southern Delta Water Quality and Master Response 2.1, Amendments to the Water Quality Control Plan, regarding baseflow requirements at Vernalis. Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the Program of Implementation, the Stanislaus Tuolumne, and Merced Working Group, and the San Joaquin River Monitoring and Evaluation Program. Please see Master Response 3.1, Fish Protection, for a description of fish benefits that result from the LSJR plan amendments

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		<p>and hydrology-related experts to manage the monitoring and analysis of biological goals and non-flow actions, and ensure that these individuals also provide oversight for stakeholder responsibilities as they pertain to the flow objectives.</p> <ul style="list-style-type: none"> • Provide management incentives for maintaining excess reservoir carryover, in above normal or wet years, if subsequent water years are predicted to be dry or critically dry years, to be available for irrigation district purposes or salmon purposes. 	
1182	19	<p>Ultimately, it is important to keep in mind, as you make your formal decision, that the key reason for updating the plan is because desired fish and wildlife beneficial uses are not being met in the Stanislaus, Tuolumne, and Merced Rivers, due in part to insufficient flows in the rivers. It is pivotal for the Water Board not to cave in to political pressure and to allow this critical opportunity to be missed by failing to take strong action to return a significantly greater percentage of the natural, unimpaired flow to the Stanislaus, Tuolumne, and Merced Rivers.</p>	<p>Please see Master Response 1.2, Water Quality Control Process for information regarding the State Water Board’s consideration of beneficial uses. Please refer to Master Response 3.1, Fish Protection for additional discussion regarding the scientific basis for the plan amendments as it pertains to the protection of fish and wildlife beneficial uses.</p>
1183	1	<p>The Bay Delta Water Quality Control Plan has the greatest potential to improve the health of not only the Tuolumne River, but also the San Joaquin mainstem, its other tributaries, and the southern Delta. It is incredibly important that the SED lay out a clear plan for achieving biological and environmental goals, with numerical goals, and a well-articulated adaptive management plan for adjusting efforts as progress is made (or not made) on components of the plan.</p>	<p>The commenter describes the importance of the Water Quality Control Plan and providing a program of implementation with clearly defined biological goals and adaptive implementation.</p> <p>Also, please refer to Master Response 2.2, Adaptive Implementation, for additional detail regarding the adaptive implementation process.</p>
1183	2	<p>The State Water Resources Control Board’s 2010 Flow Criteria Report, using the best available science, demonstrated the strong relationship between instream flow and subsequent escapement of Chinook salmon. This report documented that 60% of unimpaired flow in the San Joaquin Basin, under current conditions, would likely be required to protect public trust resources. The Draft Revised SED recommends a flow range of 30%-50%, but offers no additional measures in conjunction with this flow recommendation to protect public trust resources. We [Tuolumne River Trust] therefore urge the Board to adopt a 50% unimpaired flow target. This target can be adjusted subsequently through careful adaptive management if other actions are taken that contribute to protecting public trust resources.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please see Master Response 1.1, and 1.2, Water Quality Control Planning Process, regarding consideration of beneficial uses and public trust. Please see Master Response 2.2, Adaptive Implementation, regarding the implementation of adaptive implementation.</p>
1183	3	<p>Historically, an estimated 130,000 salmon spawned in the Tuolumne each year. Unfortunately, naturally occurring salmon populations have not increased. In fact, fall run salmon populations on the Tuolumne have declined since 2000, with as few as a few hundred returning adults in many years. Meanwhile, the National Marine Fisheries Service (NMFS) listed Central Valley steelhead as a Threatened Species and the agency designated the Tuolumne River as Critical Habitat for steelhead in 2005. Water quality in the lower Tuolumne is now listed as impaired under Clean Water Act standards. Something must be done.</p> <p>Over the years there has been a direct correlation between flows and the health of the salmon population. For example, the heavy storms of 1982/3 flushed juvenile salmon out to the Delta, Bay and Ocean, and in 1985, 40,000 of those salmon returned as spawning adults. This was a peak in the population during that time period.</p> <p>In 1997/8 there was so much water flowing down the Tuolumne River that it spilled over Don Pedro Dam, flooding areas downstream. While this caused problems for downstream communities, it led to a peak of 18,000 returning salmon in 2000. The high flows during</p>	<p>Please see Master Response 1.1, General Comments, regarding the consideration of beneficial uses and the purpose of the plan amendments.</p>

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		<p>both of these water years benefitted juvenile salmon by creating floodplains for foraging, improving water quality, including temperature and dissolved oxygen, providing cover from predators, and moving them to the ocean faster to avoid predation.</p> <p>Our goal is to ensure that we do not repeat the failures of the past to achieve meaningful improvements not only for salmon and steelhead, but also more broadly for all native aquatic dependent species, water quality, and recreation.</p> <p>The biggest direct impacts to the Tuolumne come from Don Pedro Dam, which impedes the migration of salmon and steelhead to much of their historic spawning grounds, and water diversions that have reduced flows in the lower Tuolumne. The 1995 Settlement Agreement did not provide adequate flows to the lower Tuolumne to ensure cold temperatures are maintained in the river at critical moments in the fish’s lifecycles. Currently, only 16% of unimpaired flow is guaranteed for fish and wildlife below Don Pedro Dam. The Settlement Agreement also did not include any significant floodplain restoration. Floodplain restoration and channel-floodplain connectivity are critical for rearing of juvenile salmon. While some organizations, including Tuolumne River Trust (TRT), have independently purchased and restored more than 2,000 acres of riverside lands, there remains a need to restore many thousands of additional acres of high quality rearing habitat that is carefully integrated with a flow regime that ensures these lands are inundated with increased frequency, duration, and depth.</p>	
1183	4	<p>The proposed February through June flow requirement of 40% unimpaired flow as a starting point is too low to protect native fish populations. The State Water Board in its report Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem presented a thorough analysis of flow requirements to protect native fish species and concluded that 60% of 14-day average unimpaired flow from February through June is required to protect public trust resources. The 2010 report went on to state that the 60% criterion is “supported by sufficiently robust scientific information” (State Water Board Development of Flow Criteria, p. 119). Available information is unequivocal that 40% is too low. Testimony prepared and submitted on behalf of The Bay Institute, American Rivers, Environmental Defense Fund, Natural Heritage Institute, and the Natural Resource Defense Council clearly demonstrate the need for higher flows. Among the points made in this testimony:</p> <ul style="list-style-type: none"> - Periodic springtime inflows of 25,000 cfs are needed to achieve large-scale floodplain inundation on the lower San Joaquin as currently physically constrained. - Inflows of at least 5,000 cfs are necessary to maintain minimum temperature conditions for migrating salmonids in April and May. - Salmon population growth was negative in two-thirds of years when spring San Joaquin River inflows were below 5,000 cfs. - Population growth was positive 84% of years when inflows were in excess of 5,000 cfs. <p>The proposed 40% of unimpaired flow requirement does not meet these thresholds and will not protect public trust resources. The State Water Board provides no analysis to justify its determination that 40% of unimpaired flow will protect public trust resources. The Tuolumne River Trust believes that at least 50% of unimpaired flow is necessary to protect</p>	<p>Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the recommendation and justification for the proposed flow objective.</p> <p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>The comment is not correct. The SED provides sufficient analysis to support the proposed plan amendments. The proposed plan amendments recommend 40 percent of unimpaired flow within an adaptive range of 30 and 50 percent of unimpaired flow. The SED analysis shows that this range will provide reasonable protection of fish and wildlife while moderating impacts to water supply for agriculture, drinking water and other uses. These considerations, together with the evaluation of impacts on other beneficial uses, are explained in a level of detail in the SED that is appropriate for a programmatic analysis and provides a factual basis for the State Water Board’s ultimate determination.</p>

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		public trust resources.	
1183	5	<p>As described in the SED, the State Water Board’s objective is to protect native fish populations, yet the entire focus of the flow analysis appears to be focused solely on salmonids. For fall run Chinook salmon, the SED restricts itself to providing flows only for outmigrating juveniles, and ignores the needs of other life stages, including upmigration, spawning, and incubation. The SED ignores the summertime needs of steelhead. Beyond salmon and steelhead, the SED ignores the needs of other native fish species, including spring run Chinook salmon, Green sturgeon, Delta smelt, Longfin smelt, Sacramento splittail, River lamprey, San Joaquin roach, Pacific lamprey, and hardhead. While in general fall run Chinook salmon and steelhead receive the majority of attention through agency recovery programs, the SED provides little justification for limiting its scope to these species. This appears to be contrary to the explicitly stated goal of providing flow conditions to maintain the natural production of viable native fish populations migrating through the Delta.</p> <p>The State Water Board must take a more holistic approach to aquatic ecology in the lower San Joaquin River and examine the full life cycle of salmon, steelhead, and other species. By isolating life cycles and/or species, the State Water Board is taking a piecemeal approach that will unlikely result in recovery of any of the species and will doom future recovery efforts. Even if juvenile salmon survival is improved through the lower San Joaquin River, it provides no certainty that other life stages will be similarly successful. Beyond fall run Chinook salmon, the continued decline of other species could threaten the entire integrity of the Bay-Delta ecosystem, just as we have seen occurring with the decline of pelagic organisms in the Delta.</p>	<p>Please see Master Response 3.1, Fish Protection, specifically regarding the use of surrogates and where in the analyses it is identified that such a surrogate is appropriate and where differences are distinguished.</p>
1183	6	<p>The draft narrative objective stated in the SED states: Maintain inflow conditions from the San Joaquin River Watershed to the Delta at Vernalis, sufficient to support and maintain the natural production of viable native San Joaquin River Watershed fish populations migrating through the Delta. Inflow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that more closely mimic the natural hydrographic conditions to which native fish species are adapted, including the relative magnitude, duration, timing, and spatial extent of flows as they would naturally occur. Indicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity (SED p.3-8).</p> <p>The Draft Revised SED states: “The salmonid biological goals for this program of implementation will be specific to the LSJR and its tributaries and will contribute to meeting the overall goals for each population, including the salmon doubling objective established in state and federal law. Biological goals for salmonid populations will be consistent with best available scientific information, including information regarding viable salmonid populations, recovery plans for listed salmonids, or other appropriate information” (Appendix K, p. 33).</p> <p>We strongly support inclusion of the doubling goal, but are concerned that there is no clear linkage with how the recommended flow range of 30%-50% of unimpaired flow from February- June will actually achieve the doubling goal. We strongly recommend further analysis and explanation of cause-effect relationships to better elucidate how the plan will achieve the doubling goal.</p> <p>There is an extensive body of scientific information available that the Board can analyze and incorporate into the SED that would clarify how the proposed flow contributes to viable</p>	<p>As described in Appendix K, Water Quality Control Plan Update, the program of implementation describes biological goals (indicators of viability including abundance; productivity as measured by population growth rate; genetic and life history diversity; and population spatial extent, distribution, and structure) that will specifically be developed for LSJR salmonids to ascertain the effectiveness of the program of implementation. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for clarifying descriptions regarding modifications to the plan amendments, and the program of implementation, including discussions of biological goals and the relationship between the salmon doubling objective and the LSJR flow objectives. Please also refer to Master Response 2.2, Adaptive Implementation, for clarification regarding the adaptive implementation process. Refer to Master Response 3.1, Fish Protection, for a description of the importance of biological goals from a population monitoring perspective.</p> <p>Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, presents biologically important and measureable benefits of providing higher and more variable flow during the February 1 through June 30 time period. A life-history population simulation model (i.e. SalSim) for fall-run Chinook salmon originating from the SJR and its upper three east-side salmon bearing tributaries (Stanislaus, Tuolumne, and Merced Rivers) was used to provide insight into population level changes that could be expected under a variety of unimpaired flow scenarios. Please refer to Master Response 3.1, Fish Protection, for more information regarding SalSim and the use of best available science.</p>

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		salmonid populations. There is no clear quantitative analysis presented that demonstrates the relationships between hydrographs and salmon survival. As a result, we cannot determine what level of survival will be achieved by the proposed 30%-50% range of flows.	
1183	7	<p>We object to the Board’s proposed adaptive management plan, specifically the proposed governance scheme. In the Draft Revised SED, the Board proposes a Stanislaus, Tuolumne, Merced Working Group (STM Working Group) that will recommend adaptive operations, procedures for implementing the adaptive management activities, and assessment of the effectiveness of flows. The Board proposes to include State and Federal fisheries agencies and local water users. The Board does not propose to include representatives of the fishing industry, conservation groups, or the public interest in general, which creates a basic issue of fairness. The rules under which the STM Working Group will operate and the decision-making process are not clear. We believe this governance scheme is doomed to face gridlock and failure.</p> <p>One of the elements of the 1995 Settlement Agreement was a Tuolumne River Technical Advisory Committee (TRTAC), which was made up of CDFW, USFWS, TID, MID, and CCSF. Although conservation groups and other interested parties were allowed to participate in TRTAC meetings, decisions were formally made by the fish and water agencies. Our experience was that when it came to flow scheduling in particular, the governance did not work very well.</p> <p>We recommend that the Board maintain decision-making in-house with regard to the issues that it has proposed assigning to the STM Working Group. If the Board wishes to solicit the recommendations of agencies and water users, it can do so through a public meeting process, which would likely be required anyway to ensure compliance with the Ralph M. Brown Act and the California Environmental Quality Act. In essence, changes to operations have the potential to have impacts on public trust resources, and thus decisions should be made in an open and transparent process. Even if the STM Working Group is established, it will still need to adhere to open meeting policies and afford the public the opportunity to comment. We recommend eliminating the additional layer of bureaucracy and simply conducting open meetings that provide all interested members of the public the opportunity to participate. Decision-making, however, should be retained by the Board or its Executive Director.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments regarding the STM Working Group governance and membership. The Board can provide direction to the Executive Director at any time, before or after adoption of the Plan, regarding the composition of the STM Working Group. SED Appendix K explains that the Executive Director can include any persons that have appropriate expertise.</p> <p>SED Appendix K and the Executive Summary describe how adaptive implementation and decision-making will proceed when there is no consensus. As further described in Master Response 2.2, State Water Board staff will provide a backstop for how adaptive implementation can proceed if there the STM Working is unable to agree.</p>
1183	8	<p>The State Water Board’s proposal to adopt the objective of 40% of unimpaired flow as a starting point appears to be made as an effort to balance the competing uses of water. However, no clear standards or explicit decision-making framework is identified to support the recommendation. The Board must describe a transparent process and framework for reaching any conclusion, and it must clearly justify the conclusion. As it stands, the 40% of unimpaired flow recommendation appears to be made with little or no clear justification. In fact, it will not protect public trust resources. We recommend that the Board define its decision-making framework and process before making a decision.</p>	<p>Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the recommendation and justification for the proposed flow objective.</p> <p>Please refer to Master Response 1.2, Water Quality Control Planning Process, for response to comments regarding consideration of beneficial uses and public trust. While setting flow objectives with regulatory effect, the State Water Board reviews and considers all the effects of the flow objectives through a broad evaluation into public trust and public interest concerns including, but not limited to, aquatic resources, economics, reservoir storage, power production, and groundwater. A precise quantification is not required to meet fulfill the State Water Board’s water quality planning obligations. (United States v. State Water Resources Control Bd., supra, at 182 Cal.App. 3d at pp. 118-119.) As summarized in the Executive Summary and discussed in detail throughout the SED, the SED provides such an evaluation. In accordance with CEQA and the Porter-Cologne Act, the SED identifies and evaluates the potential significant adverse environmental effects of the project, as well as economic and other impacts. This includes, for example, analyses of impacts to agricultural resources (Chapter 11, Agriculture Resources, and Appendix G, Agricultural Economic Effects of the Lower San Joaquin River Flow Alternatives), service providers (Chapter 13, Service Providers), and</p>

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			<p>other economic analyses (Chapter 20, Economic Analyses). The SED’s analyses provide a sufficient and credible assessment of the environmental impacts and other considerations that will inform the State Water Board’s decision regarding the plan amendments. For a summary of the resource impacts analyzed in the SED, please refer to Chapter 18, Summary of Impacts and Comparison of Alternatives, and Master Response 1.1, General Comments.</p>
1183	9	<p>We are concerned that installation of the gage to measure flow on the Tuolumne just above its confluence with the San Joaquin River could result in flows below La Grange Dam, where anadromous fish spawn and juvenile fish rear, being reduced to less than the required unimpaired flow between February and March. This is because at times Dry Creek contributes significant inflow into the Tuolumne above the proposed gage. If Dry Creek flows contribute to the percentage of unimpaired flow, releases from La Grange could be reduced, potentially harming juvenile fish. We request that the unimpaired flow requirement be imposed immediately below La Grange Dam in order to maximize the benefits to fish populations.</p> <p>Note that La Grange Dam, located two miles below Don Pedro Dam on the Tuolumne River, is currently undergoing a licensing process. La Grange Dam was built in 1883 by the Turlock and Modesto Irrigation Districts. Having been built prior to the Federal Power Act, the dam was never issued a license from the Federal Energy Regulatory Commission (FERC). However, through the course of the relicensing of Don Pedro Dam, several parties requested that FERC review the La Grange project due to modifications that occurred subsequent to the passage of the Federal Power Act and other characteristics of the dam. Ultimately, FERC determined that La Grange Dam should be licensed, a determination that was upheld by the DC Court of Appeals. FERC has not indicated whether it will issue a single or separate licenses for Don Pedro Dam and La Grange Dam, but it has indicated that it will issue a single NEPA document for both dams. The current schedule could have the two dams licensed as early as 2020. A major aspect of the La Grange licensing is a suite of studies related to constructing fish passage facilities to move salmon and steelhead around both dams to the upper Tuolumne.</p>	<p>SED Appendix K, Table 3, identifies an existing gage station on the Tuolumne River (USGS Gage 1129000) near Modesto to be used for evaluating compliance with the LSJR flow objective on the Tuolumne River. Unimpaired flow is estimated daily by DWR at La Grange Dam (California Data Exchange Center station TLG). The State Water Board considers DWR’s Full Natural Flow (FNF) metric to be functionally equivalent to unimpaired flow at this location. Compliance with the percent of unimpaired flow objective from February through June in each river is determined by dividing the 7-day average observed flow at the compliance station in the downstream location by the 7-day average calculated Full-Natural-Flow (FNF) at the FNF stations in the upstream location, regardless of accretions and/or depletions. Using 40 percent of unimpaired flow as an example on the Tuolumne River, this means that 40 percent of the FNF estimated at the TLG station is required at USGS Gage 1129000 on a 7-day running average in the Tuolumne River near Modesto. Accretions that result in increased flows, from tributaries, groundwater and return flows, help to achieve the required flows and depletions that result in decreased flows, from diversions and groundwater losses, would require higher flows to offset these losses.</p> <p>The recommended modification to the plan amendments is not necessary to ensure that flows will not be reduced below the requirement. The plan amendments are not changed.</p> <p>Please refer to Master Response 3.2, Surface Water Analyses and Modeling, for additional information regarding calculation of percent of unimpaired flow and accretions from Dry Creek to the Tuolumne River.</p> <p>Please refer to Master Response 2.2, Adaptive Implementation, for additional discussion regarding calculation of percent of unimpaired flow and accretions and depletions.</p>
1183	10	<p>Tuolumne River Trust (TRT) believes opportunities exist to maintain robust agricultural and urban economies while also protecting and restoring the Bay-Delta and river ecosystems. Water use efficiency will be key to balancing human needs with those of other species. We present comments and recommendations below.</p>	<p>Please refer to responses to comments 1183-11-1183-26.</p>
1183	11	<p>Tuolumne River Trust (TRT) believes the revised Bay Delta Plan will not impose excessive hardship on the San Francisco Public Utilities Commission (SFPUC). This is because water conservation efforts have dramatically reduced demand in the SFPUC service territory and there’s room for more improvement. Potential socioeconomic impacts have been exaggerated, and our modeling show the SFPUC could manage the drought of record even under the increased instream flow obligation proposed in the SED.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that make a general comment regarding the plan amendments or do not raise significant environmental issues.</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p>

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1183	12	<p>Problems with Current SFPUC Reservoir Operations: The SFPUC’s policy is to assume every year is the beginning of, or continuation of, an 8.5-year “design drought.” Therefore, the SFPUC releases a minimum amount of water from its reservoirs to meet instream flow obligations and flood protection rules. The Tuolumne often runs low while water is impounded behind dams. But then when a wet year occurs, or a couple of normal years, storage fills and water must be released, often in large quantities, to free up runoff storage capacity to prevent downstream flooding. As a result, the ecosystem experiences one or two good years at the expense of many bad years, and the timing of releases often does not provide the maximum benefit to fish.</p> <p>The recent drought and subsequent wet year are a good example of how current SFPUC water operations fail to protect fish populations. During the drought, instream flows were minimal, but once the Tuolumne reservoirs filled this January, water had to be released at the maximum amount allowed, and this is expected to continue into the summer. Had releases been more evenly distributed over the past five years, the ecosystem would have experienced much greater benefit, and any decrease in storage would now be erased.</p>	<p>The comment relates to SFPUC’s operation of reservoirs in the context of fish protection. The commenter does not raise significant environmental issues related to the analysis of the plan amendments or make a general comment regarding the plan amendments. As such, no additional response is required.</p>
1183	13	<p>Conservation, Efficiency and Alternative Water Resources: By continuing to implement efficiency measures, water could be freed up for the Tuolumne River ecosystem without compromising economic output. Between 2007 and 2016, water demand in the SFPUC service territory decreased by 30% (see Attachment A) [ATT1]. In 2007 the SFPUC’s customers used about 257 million gallons per day (mgd). At that time demand was projected to increase to 285 mgd by 2018, but to avoid challenges to its Water System Improvement Program, the SFPUC agreed to cap water sales at 265 mgd until at least 2018. Conservation kicked in, and between 2010 and 2014, demand averaged about 223 mgd. In 2015 it decreased to 195 mgd, and declined even further in 2016 to 175 mgd.</p> <p>In 2014 the Bay Area Water Supply and Conservation Agency (BAWSCA), which represents the SFPUC’s 26 wholesale customers in San Mateo, Santa Clara and Alameda Counties, revised its 2040 demand projections downward by 20%. Current projections suggest total SFPUC demand (retail and wholesale combined) will be 250 mgd in 2040, well below the SFPUC’s sales cap of 265 mgd.</p> <p>The SFPUC continues to use 265 mgd as its projected future demand, but it should be noted that this figure refers to contractual obligations and not actual demand.</p> <p>There’s still plenty of room to improve water use efficiency and develop alternative water resources in the SFPUC territory. Advanced purified recycled water is especially promising. For example, the Santa Clara Valley Water District recently brought online a facility in San Jose that produces eight million gallons of advanced purified water daily, and is expected to increase to 32 mgd. This water is currently blended with tertiary treated recycled water to reduce salinity and produce better water for irrigation, but eventually it will be used to recharge groundwater for domestic and commercial uses. In the future, the Water District plans to implement a direct potable reuse program.</p> <p>Opportunities to expand the use of advanced purified water exist elsewhere in the region. For example, the Palo Alto Regional Water Quality Control Plant treats 20 million gallons of wastewater per day, but most of that water is released into San Francisco Bay. Palo Alto, which purchases water from the SFPUC, is currently partnering with the Santa Clara Valley Water District and the Cities of Mountain View and East Palo Alto to explore opportunities to utilize more recycled water. Discussions have included the possibility of recharging the</p>	<p>The commenter is referring to water use efficiency and conservation in the SFPUC service area, as well as a reduction in the projected water demand (from 265 mgd to 250 mgd in 2040) in the same area. The commenter does not raise significant environmental issues related to the analysis of the plan amendments or make a general comment regarding the plan amendments. As such, no additional response is required.</p>

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		<p>groundwater basin with advanced purified water for future use.</p> <p>Furthermore, the County of San Mateo recently initiated a groundwater assessment process to better understand the San Mateo Plain sub-basin and potentially integrate it into a more comprehensive water management program.</p> <p>Regarding water conservation, Tuolumne River Trust (TRT) leads a coalition of water agencies, business networks and environmental groups that hosts the annual Silicon Valley Water Conservation Awards. Now in its ninth year, the program highlights innovative and effective projects and programs that use water wisely and serve as models for others. Award winners demonstrate that there are tremendous opportunities to reduce water consumption without compromising economic output or quality of life. Information on past winners can be found at www.WaterAwards.org.</p>	
1183	14	<p>The SFPUC’s Socioeconomics Study is Flawed: Following the release of the SED, the SFPUC and BAWSCA published a guest editorial in the San Francisco Chronicle suggesting the revised Bay Delta Plan could result in \$49 billion in lost sales revenue and the loss of 188,000 jobs. In the ensuing months, the SFPUC referenced these figures in meetings with influential groups and decision-makers, so the Water Board will likely see them cited in various comment letters. However, the study these projections were based on was seriously flawed.</p> <p>In 2009, economist David Sunding, a consultant for the SFPUC, presented the above figures before an administrative law judge during a FERC relicensing proceeding. These figures were again presented in 2013 before the State Water Board. In 2014 Mr. Sunding fleshed out his analysis and presented a draft study to the SFPUC [FOOTNOTE1: Socioeconomic Impacts of Water Shortages within the Hetch Hetchy Regional Water System Service Area, March 13, 2014, https://www.tuolumne.org/wp-content/uploads/2016/10/CCSFdraft-Socioeconomic-Study_3_13_2014.pdf]. It was circulated for comment, and a coalition of environmental groups provided a response [FOOTNOTE2: Conservation Groups’ Comments on CCSF Draft Socioeconomics Report for FERC Relicensing of Don Pedro Dam, April 9, 2014, https://www.tuolumne.org/wp-content/uploads/2016/10/Conservation-Groups-Comments-on-SFPUC-Socioeconomics-Study-.pdf].</p> <p>The environmental groups identified a number of problems with the 2014 study. For example, it based rationing on demand vs. supply, it comingled Bay Area water sources with Tuolumne supply, it treated instream flow as reduced water supply and failed to assess the impact of carryover storage and replenishment, and it misjudged consumer response and conservation potential.</p> <p>Despite the fact that the updated 2014 study projected lower socioeconomic impacts than the 2009 study, the SFPUC chose to cite the higher figures from the earlier study. Real world experience over the past few years showed that both studies were far from accurate. Water use in the SFPUC service territory decreased 30% between 2007 and 2016, which was the equivalent of 30% rationing, yet the region did not lose any jobs or sales revenue. In fact, both grew. According to the CA Employment Development Department, between 2010 and 2015 San Francisco added 125,400 jobs and San Mateo County added 65,700 jobs. Alameda County and Santa Clara County, both of which receive a portion of their water from the SFPUC, added 93,200 and 172,500 jobs respectively.</p> <p>The 2014 study projected the loss of \$6.5 billion and nearly 25,000 jobs at 30% rationing,</p>	<p>The commenter is, in part, commenting on a previous study pertaining to socioeconomic impacts, which was prepared by another party as part of a project that is different than the plan amendments. This comment does not make a general comment regarding the plan amendments or raise significant environmental issues.</p> <p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>Please see response to comment 1183-11.</p>

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		<p>which did not happen. The 2009 study did not specifically cite potential impacts from 30% rationing, but its projections for other rationing levels were higher than those in the 2014 study, so they were even more off the mark (See Attachment B) [ATT2 and ATT3].</p> <p>The figures cited by the SFPUC suggest that every acre-foot of water lost would result in more than \$400,000 in lost sales revenue. Should the SFPUC ever need to purchase additional water, one would think they could find a seller who would be willing to charge less than \$400,000 per acre-foot. In water transfer negotiations with the Modesto Irrigation District in 2012, the price discussed was \$700 per acre-foot.</p>	
1183	15	<p>The SFPUC Could Manage the Drought of Record Under the Revised Bay Delta Plan: Between its Sierra and Bay Area reservoirs, the SFPUC has 1,458,684 acre-feet of storage capacity without encroaching into flood water storage. Of this, 96,000 acre-feet is considered dead pool. On occasion, the SFPUC can utilize an additional 170,000 acre-feet of flood water storage capacity in its water bank at Don Pedro Reservoir. The SFPUC's large amount of storage provides a buffer against extended droughts.</p> <p>For example, at the height of the recent drought, the SFPUC still had enough water in storage to last three years. By December 2016, following the normal 2015/16 water year and a good start to the 2016/17 water year, storage rebounded to 1,208,712 acre-feet – enough water to last five years (see Attachment C) [ATT4]. By early January 2017, all of the Tuolumne reservoirs were near capacity, and water had to be released from Don Pedro at the maximum amount allowed (9,000 cfs) to prevent downstream flooding. There's so much snow in the Tuolumne watershed now that these high releases are expected to continue into the summer.</p> <p>Tuolumne River Trust (TRT) created a model to explore how the revised Bay Delta Plan might impact the SFPUC's water supply if the 1987-1992 drought of record were to reoccur (see Attachment D) [ATT5 and ATT6]. Assuming water demand rebounds to the pre-recent drought level of 223 mgd, the State Water Board requires 40% of unimpaired flow between February and June, the SFPUC is responsible for 52% of the flow increase per the 4th Agreement, and only modest rationing occurs, our modeling demonstrates the SFPUC could withstand the drought of record if it were to occur in the near future.</p> <p>Assuming demand projections are correct, and total water demand increases to 250 mgd by 2040, there would be a slight deficit of 102,000 acre-feet in the sixth year of a repeat of the six-year drought of record.</p>	<p>The commenter is indicating that SFPUC has the ability to manage the drought of record with plan amendments implemented based on SFPUC's Sierra and Bay Area reservoirs storage capacity. The commenter does not raise significant environmental issues related to the analysis of the plan amendments or make a general comment regarding the plan amendments. As such, no additional response is required.</p>
1183	16	<p>Implementing a Groundwater Recharge Program: Should the State Water Board require instream flows higher than 40%, which we hope it will, the SFPUC and the Modesto and Turlock Irrigation Districts could compensate for the reduction in water supply by partnering to implement a groundwater recharge program in Stanislaus County. Such a project could capture and store excess water in years like WY 2016/17 in which maximum flows are being released from Don Pedro to create capacity in the dam for floodwater capture. These high releases are expected to continue into the summer.</p> <p>Such a program could be similar to how Don Pedro Reservoir is managed. The SFPUC helped fund construction of the dam in exchange for a water bank of 570,000 to 740,000 acre-feet. When the SFPUC's upstream reservoirs are full, and it is still entitled to capture more runoff per the Raker Act, the excess water can be banked in Don Pedro. In future dry years, the SFPUC can capture water in Hetch Hetchy to which it would otherwise not be entitled, and</p>	<p>The comment supported an instream flow requirement higher than 40 percent of unimpaired flow and suggested a groundwater recharge project. Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments.</p>

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		<p>subtract an equal amount from the water bank.</p> <p>Groundwater recharge also would help the Irrigation Districts meet SGMA requirements.</p>	
1183	17	<p>Agricultural water use efficiency must be an integral part of any solution to ensure that water is used as wisely as possible to better meet the needs of the environment, agriculture and urban uses. There are undoubtedly a range of options that could be explored to improve water use efficiency in agricultural irrigation.</p>	<p>Please see Master Response 3.5, Agricultural Resources, and Chapter 11, Agricultural Resources, Section 11.5, Impacts and Mitigation Measures, for information about irrigation efficiency and demand management.</p>
1183	18	<p>Water-Efficient Irrigation Practices and Technologies: Water efficient irrigation practices and technologies, including 1) soil moisture sensors and smart irrigation controllers, 2) real-time weather data, daily evapotranspiration reports and computer models that help farmers irrigate more precisely, and 3) shifting crops from flood irrigation to sprinklers and drip systems would help farmers adjust to reduced water availability. Improving irrigation efficiency has the added benefit of reducing fertilizer and pesticide use, reducing soil erosion, and minimizing runoff.</p> <p>Pressurized irrigation delivery systems present significant opportunities to save water. The South San Joaquin Irrigation District (SSJID) completed a pilot project to understand the potential benefits of converting open canal deliveries to a pressurized water delivery system. The pilot project, conducted on a 3,800-acre portion of the District, demonstrated that water use could decrease by 30% while productivity increased 30% [FOOTNOTE3: American City & County, March 2015. Maximizing crop per drop for California farmers, p. 5. http://viewer.zmags.com/publication/a0d7babd#/a0d7babd/6, retrieved 3/13/17]. For the SSJID alone, this could translate into saving as much as 73,000 acre-feet of water per year [FOOTNOTE4: The Modesto Bee, September 8, 2015. SSJID exploring remaking the entire delivery system. http://www.modbee.com/news/article34425708.html, retrieved 3/13/17].</p>	<p>Please see Master Response 3.5, Agricultural Resources, and Chapter 11, Agricultural Resources, Section 11.5, Impacts and Mitigation Measures, for information about irrigation efficiency and demand management.</p>
1183	19	<p>Modest Crop Shifting: Modest crop shifting could increase crop value while reducing water consumption. By replacing lower-value, water-intensive crops with higher-value, water-efficient crops, farmers could produce more food with less water. According to a report by the Pacific Institute a few years ago, field crops, such as rice and alfalfa, accounted for 56% of irrigated acreage in California. They used 63% of applied water but generated only 17% of California's crop revenue. Vegetables, on the other hand, accounted for only 16% of irrigated acreage, and used just 10% of applied water, but generated 39% of California's crop revenue.</p> <p>Incentivizing some transition to higher-value, water-efficient crops would increase agricultural income while freeing up more water for the benefit of fish and wildlife, water quality and recreation.</p>	<p>Potential shifts in cropping patterns from lower net revenue crops to higher net revenue crops were modeled as part of the SED local agricultural economic analysis using SWAP. Please see Master Response 8.1, Local Agricultural Economics Effects and the SWAP Model, for discussion of the SWAP model and its assumptions.</p>
1183	20	<p>Infrastructure Improvements and Tailwater Capture: In 2011, the Modesto Irrigation District proposed capturing and selling up to 25,000 acre-feet of tailwater spills to San Francisco. This is water that normally runs off of agricultural fields into the lower Tuolumne and San Joaquin Rivers. As part of the proposal, MID would have captured the runoff before it spilled into the water, pump it back to the east, and provide it to farmers for irrigation, thus reducing withdrawals by 25,000 acre-feet. Due to ratepayer opposition, the project was eventually dropped, but the fact remains that at least 25,000 acre-feet of tailwater spills could be captured and used for irrigation. MID's own Agricultural Water Management Plan identified 49,700 acre-feet of operational spills. The Turlock Irrigation District's Agricultural</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments.</p>

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		<p>Water Management Plan identified 56,000 acre-feet of operational spills.</p> <p>MID’s Water Resources Management Plan identified several infrastructure improvements that have the potential to reduce water waste dramatically. These include renovating the Dry Creek Flume, improving the main lateral and headings, improving flow control structures, instituting outflow interception, installing canal interceptor pipelines, and constructing regulating reservoirs (see Attachment E) [ATT7].</p>	
1183	21	<p>Eliminating Water Subsidies and Improving Tiered-Pricing: Irrigation water in Stanislaus County is artificially cheap, providing little incentive to use it more efficiently. In fact, a class-action lawsuit filed by electricity customers contends they’re being overcharged to subsidize water customers. According to a March 14, 2017 article in the Modesto Bee, “MID staff last year said the gap between farm water revenue (\$3.82 million) and the district’s cost to deliver it (\$21.2 million) came to more than \$17 million” (see Attachment F) [ATT8].</p> <p>The Modesto and Turlock Irrigation Districts should consider higher volumetric pricing of water through an improved tiered-rate structure. Currently, the vast majority of cost is incorporated into the fixed charge, and volumetric increases are minimal. MID’s structure is as follows:</p> <ul style="list-style-type: none"> -Fixed charge: \$40/acre -First two acre-feet: \$1/acre-foot -Third acre-foot: \$2 -Next six inches: \$3/acre-foot -Anything above 42 inches: \$10/acre-foot <p>TID rates are only slightly higher, as follows:</p> <ul style="list-style-type: none"> -Fixed charge: \$60/acre -First two acre-feet: \$2/acre-foot -Third and fourth acre-feet: \$3/acre-foot -Fifth acre-foot: \$15 <p>By increasing volumetric rates, the Irrigation Districts would send a strong price signal to encourage efficiency while potentially generating revenue to help fund those efficiency measures.</p>	<p>Irrigation district water rates are set by the districts themselves, not the SWRCB. It is speculative to assume how water rates will change in the future as they will depend on many factors. Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments and general information regarding the economic analysis.</p>
1183	22	<p>Dry Creek Flood Detention and Groundwater Recharge: Dry Creek is an unregulated tributary to the Tuolumne River that originates in the low foothills east of Modesto and flows southwestward until it joins the Tuolumne River in Modesto. Although for much of the year Dry Creek mostly conveys agricultural and urban runoff, during heavy, localized rainstorms, discharges on Dry Creek can reach up to 5,000 cfs. The U.S. Army Corps of Engineers (Corps) at one time had proposed evaluating a flood detention basin on Dry Creek that could hold 20,000-30,000 acre-feet. Coming on the heels of the 1997 floods, the Corps was primarily motivated by flood management benefits and did not consider the possible</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>

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		benefits of groundwater recharge. Unfortunately, the study was never completed.	
1183	23	<p>Operation of the Infiltration Gallery and Pump Station at Geer Road: As part of the 1995 Settlement Agreement for the Don Pedro Project, the Turlock and Modesto Irrigation Districts (TID and MID) agreed to advance a plan to divert water for irrigation from a downstream location on the Tuolumne River to provide additional water upstream to improve fish habitat. Under this project, an additional 100 cfs would remain in the Tuolumne River channel rather than being diverted from La Grange Reservoir. This would improve flows in the important fish-spawning habitat on the lower Tuolumne. The Infiltration Gallery, which is essentially an in-channel diversion facility that relies on the river bed's sand and gravel to act as a screen, was installed when the Special Run Pool 9 Restoration Project at river mile 26 was completed in 2002. Several municipalities south of the Tuolumne River that currently rely on groundwater are exploring whether to connect the infiltration gallery and begin purchasing surface water for municipal use from TID. Although these project partners are actively working towards this goal, to date no project has been built. If this project were accelerated, the 26 miles of the Tuolumne River between La Grange Dam and RM 26 would benefit from increased flows while there would be no reduction in diversions.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments including adaptive implementation and the incorporation of non-flow measures as they relate to the percent of unimpaired flow requirements. Please see Master Response 5.2, Incorporation of Non-Flow Measures, for more information regarding the incorporation of non-flow measures in the plan amendments.</p>
1183	24	<p>Updating of the Don Pedro Flood Control Manual: The Don Pedro Flood Control Manual was written by the U.S. Army Corps of Engineers in 1972. This manual requires that TID maintain flows at Modesto, 38 miles downstream of Don Pedro Dam, at no more than 9,000 cfs. Don Pedro Dam is capable of releasing up to 15,000 cfs through its outlet works. This objective release does not require the use of the Dam's gated or emergency spillways. Dam operators must take into account any high flows on Dry Creek, which can be as much as 5,000 cfs, when targeting their releases from Don Pedro Dam. Because the water's travel time is approximately 24 hours from Don Pedro to Modesto, dam operators have to reduce their flows to as little as 4,000-5,000 cfs 24 hours prior to any storms in the Dry Creek watershed. Unfortunately, the 45-year old dam manual is significantly out of date. It does not take into account modern weather forecasting, a better understanding of the watershed's hydrology, and on-the-ground changes that have occurred in the floodway since 1972. A number of channel constrictions have been removed or modified since 1972 that would allow for greater release levels from Don Pedro Dam. For example, over 2,500 acres of low-lying floodplain have been purchased for flood management and habitat conservation purposes. Several bridges with narrow footings have been removed or modified. The Modesto Wastewater Treatment Plant has received upgrades to better protect it from floods (and it may soon be removed from the floodplain altogether).</p> <p>While there is certainly more that can be done, all of this work has paid off and the river channel can indeed convey higher flows than the flood manual indicates. As we witnessed during this year's very wet winter, the flood reserve pool became severely encroached and came within 1-2 feet of the emergency spillway as more and more runoff filled the reservoir. All the while, the dam operators maintained modest releases. However, TID did eventually get permission from the Corps to open its controlled spillway (only the second time since the dam was constructed) and released 16,000 cfs. The dam operators maintained higher releases exceeding the 9,000 cfs maximum for several weeks and there were no reports of any permanent structures being flooded. The channel and floodplain improvements along the river seem to have paid off and the flood control manual should be updated. If the dam operators know that the channel can convey higher flows, they can store more water behind the dam and release it when truly necessary. This could improve</p>	<p>Please see response to comment 1183-23.</p>

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		water availability in the spring.	
1183	25	Better Snowpack Monitoring: Through improved monitoring of the snowpack, more water could be released from reservoirs in the spring to enhance the out-migration of juvenile salmon, and then late season run-off could be captured for storage. Currently, in many years water is captured when the salmon need it most, and then released later in the season to create capacity for flood water storage. Better management would allow for both beneficial releases and storage.	Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. In addition, please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the role and responsibilities of the STM Working Group.
1183	26	Generating Revenue from Crop Exports: In California, water is a public trust resource, meaning it belongs to the people of California. Water agencies have water rights, but the State Water Board can determine which beneficial uses have priority. It could be argued that food grown for Californians is a beneficial use of our water, but it's harder to make that case for exports. Agricultural exports benefit a few farmers – often corporations – at the expense of other beneficial uses. In 2015 California's agricultural exports generated \$21.5 billion in sales. The State should consider imposing a fee on water used to grow crops for export, and dedicate the funds to helping farmers implement water efficiency measures.	Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments and general information regarding the economic analysis.
1183	27	[ATT1:] Graph of Average Total System Delivery per Year, Fys 1971-2016	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	28	[ATT2:] Table listing how projected sales losses were inflated	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	29	[ATT3:] Table listing how projected job losses were inflated	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	30	[ATT4:] Table of 12/11/2016 reservoir storage levels	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	31	[ATT5:] Tuolumne River Trust (TRT) Models for SED Impact on SFPUC if Drought of Record Reoccurred.	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	32	[ATT6:] Spreadsheet and column notes for Tuolumne River Trust (TRT) Models for SED Impact on SED if Drought of Record (1987-1992) Reoccurred.	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	33	[ATT7:] Modesto Irrigation Districts Comprehensive Water Resources Management Plan Feb. 28, 2012 Presentation	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	34	[ATT:7:ATT1:] Generalized Average Water Balance graphic	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	35	[ATT7:ATT2:] Examples of Necessary Work slide	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1183	36	[ATT7:ATT3:] Potential Water Savings and Estimated Cost slide	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

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1183	37	[ATT8:] Modesto Bee Article: "MID board debates farm water subsidy while class-action lawsuit looms."	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1184	1	<p>The 2016 SED contains many fatal flaws, including, but not limited to, those enumerated immediately below.</p> <p>First: The bifurcation from the San Joaquin River of the upper San Joaquin River, and its (on average) 28% of the unimpaired inflow of the San Joaquin watershed, unreasonably transfers the total burden of providing fish flows, dilution of Westside wastes and contribution to Delta outflow to the lower San Joaquin tributaries. We could find no defensible discussion, rationale or technical or legal justification in the SED for this approach. It violates basic fairness and due process.</p> <p>Second: We could find no defensible technical or legal justification for selecting a target of 40% and a range of 30 to 50% as adequate for the protection of public trust resources. The Board's 2010 flow report found that 60% February through June unimpaired flow is minimally necessary to protect public trust resources. The Department of Fish and Game's (now Department of Fish and Wildlife, DFW) 2010 Quantifiable Biological Objectives and Flow Criteria Report echoed this conclusion. [Footnote 7: California Department of Fish and Game, Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta, November 23, 2010. Hereinafter, DFW 2010 Flow Report. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=25987]</p> <p>The SED contains no discussion of the methodology employed to select the recommended alternative. The proposed objectives and program of implementation in the SED's Appendix K contain no enforceable qualitative and quantitative performance measures to ensure progress.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding why the Upper San Joaquin is not included in the plan amendments and justification for the LSJR Alternative 3. Please see Master Response 1.2, Water Quality Control Plan Process, on why the Board is not bound by the 2010 Flow Criteria Report. Please see Master Response 3.1, Fish Protection, for information about the benefits to fish from the LSJR Alternative 3 and how it will address those key factors that have contributed to the decline of native fish species so as to protect fish and wildlife beneficial uses. With respect to performance measures, the water quality objectives are themselves set forth the metrics that must be achieved and Appendix K includes comprehensive monitoring, special studies, evaluation, and reporting requirements to evaluate compliance with the proposed water quality objectives. Appendix K also requires the development of biological goals to assess the effectiveness of the program of implementation to achieve the flow objectives.</p>
1184	2	<p>There is a lack of measurable performance measures, milestones and funding mechanisms to ensure success of the proposed "adaptive implementation" (aka adaptive management) program. Adaptive management appears to consist of the Stanislaus, Tuolumne and Merced (STM) Working Group gathering together in a back room to make deals, subject to approval of the Board's Executive Director, with no defined or required formal public process before the Board: otherwise known as business as usual. The quarter-century track record of adaptive management in the Delta--from CalFed to the Vernalis Adaptive Management Program, the Interagency Ecological Program, biological opinions and associated work groups, and myriad State Board proceedings--has been one of utter failure.</p>	<p>Please refer to the program of implementation in SED Appendix K that states: "The State Water Board will require in water right permits and water quality certifications, as appropriate, annual and comprehensive monitoring, evaluation, and reporting." Monitoring and assessment will inform adaptive implementation. The San Joaquin River Monitoring and Evaluation Program section of Appendix K describes both annual and comprehensive (every three to five years) reporting requirements. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, regarding San Joaquin River Monitoring and Evaluation Program.</p> <p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding adaptive management and the bounds under which it may proceed, as well as when the Board will act in public meetings to approve adaptive adjustments.</p>
1184	3	<p>Both staff and Board members stated during hearings that Phase I will include the balancing of the public trust. However, the SED offers no analysis of the methodology of the balancing that staff employed in developing its recommended project or that staff recommends that the Board apply in balancing. While the SED quantifies economic costs to agricultural and selected M&I water users, it does not quantify the economic benefits of healthy waterways, including ecosystem services, commercial and sport fisheries, recreation, public health, and the contingent value of a healthy river and estuary. The SED fails to identify, discuss or use the numerous state and federal guidelines and guidebooks on economic analyses that are routinely used by the Army Corps, USBR, USEPA and DWR in evaluating benefits and costs pertaining to public trust resources. We note that the public-trust balancing at Mono Lake found that the value of restoring the lake was between 56 and 132 times the value of the</p>	<p>Please see Master Response 1.1, General Comments, regarding how the public trust doctrine allows the balancing of competing uses. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for justification for adoption of LSJR Alternative 3 and SDWQ Alternative 2. Please see Master Response 1.2, Water Quality Control Plan Process, for why a cost-benefit economic analysis is not necessary. Please see Master Response 8.0, Economic Analyses Framework and Assessment Tools, for comments regarding the development and application of an appropriate analytical framework for the economic analysis. Please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding the economic benefits of the plan amendments related to ecosystem valuation, and recreation.</p>

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		<p>water lost by Los Angeles.</p> <p>The SED's failure to quantify both sides of the benefit/cost ledger renders the SED and its economic analysis inadequate to support balancing.</p>	
1184	4	<p>The SED proposes to increase the salinity limit in the south Delta by 43% during the irrigation season, based upon the six-year-old Hoffman Report [Footnote 8: SED Appendix E.] that: 1. Used 30-year old laboratory data on salt tolerance of bean varieties that are no longer relevant and ignored effects on different life stages; 2. Improperly employed data from subsurface drains in developing leaching fractions; and 3. Rejected more conservative modeling results.</p> <p>The SED ignores Dr. Hoffman's explicit recommendations on needed additional studies. More recent research has established that Dr. Hoffman's leaching fractions are wrong. Consequently, the conclusions of the report are also wrong.</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, regarding the justification for amending the salinity objective and responses to comments on the Hoffman Report. Appendix E used the current state of knowledge on crop salt tolerance along with available input information such as leaching fraction, crops, and water quality from the Delta. Please see Chapter 11, Agricultural Resources, Section 11.4.2, Methods and Approach, and Impacts AG-1 through AG-4 for the analysis of potential impacts of salinity on crops in the southern Delta.</p>
1184	5	<p>There is no analysis in the SED of salinity impacts to riparian and aquatic vegetation, or to fish and plankton populations that have been identified as salt-sensitive.</p>	<p>Please see Chapter 7, which explains how overall salinity levels would not change but be reduced relative to baseline such that sensitive fish species would not be affected. Potential salinity effects on terrestrial habitat are discussed for impact BIO-1 in Chapter 8. It explains how any episodic salinity changes with respect to terrestrial habitat would be very small, if imperceptible, and be a less than significant impact.</p>
1184	6	<p>State and federal law has mandated a doubling of anadromous fisheries for more than two decades. The narrative standard in the Water Quality Control Plan has been ignored since it was established in 1995. Failure to include measurable performance measures with milestones ensures that the narrative standard remains unenforceable.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the salmon doubling objective. Please see Master Response 3.1, Fish Protection regarding biological goals.</p>
1184	7	<p>This comment letter identifies violations of the federal Clean Water Act (CWA), the Porter-Cologne Water Quality Control Act (hereinafter "Porter-Cologne"), the Delta Reform Act of 2009, the California Environmental Quality Act and the Public Trust Doctrine. Further, we observe that the State Water Resources Control Board has put forward proposed amendments to San Joaquin River flow and South Delta salinity objectives for the 2006 Water Quality Control Plan for the Bay-Delta Estuary. Under the Clean Water Act, the Board has failed to comply with requirements to protect the most sensitive beneficial uses and to comply with its own federal Clean Water Act anti-degradation policy for water quality. The Board has failed to formulate these amendments to the 2006 Bay-Delta Plan in a manner that analyzes the competing demands of all beneficial uses.</p> <p>The Water Board has a federal mandate under the CWA to protect waterway beneficial uses, particularly "protection and propagation of fish, shellfish, and wildlife" (CWA § 101(a)(2)). This mandate may properly impact individual water rights as needed to address "legitimate and necessary water quality considerations." Accordingly, the update of the Water Quality Control Plan must specifically consider CWA compliance in developing and assessing alternative flow scenarios.</p>	<p>Please see Master Response 1.1, General Comments regarding the State Water Board's authorities and relationship with other plans and programs such as the Delta Reform Act. Please see Master Response 1.2, Water Quality Control Planning Process regarding the consideration of beneficial uses. Chapter 23, Antidegradation Analysis provides an overview of the State Water Board's antidegradation policies and an analysis of the plan amendments potential effects on water quality. Because the LSJR flow objectives would increase flows during February-June, they would not result in the lower of water quality in the Stanislaus, Tuolumne and Merced Rivers, the LSJR and the southern Delta. Increased flows in response to implementation of the LSJR flow alternatives would have the incidental benefit of providing a low salinity irrigation water supply to flush salts early in the irrigation season, and thus provide better salinity conditions during spring germination of crops, which is generally the most salt sensitive time (Executive Summary, Section ES6.1, Southern Delta Water Quality Alternatives, and Chapter 18, Summary of Impacts and Comparison of Alternatives). Please also see response to comment 1184-8.</p>
1184	8	<p>State flow and salinity objectives must fully protect--not "reasonably protect"--beneficial uses. The CWA does not allow protection of these uses to be balanced away. Application of Porter-Cologne Section 13241 factors, or a misuse of balancing between public trust assets and economic interests, cannot result in beneficial use protections that are less than those that the CWA mandates. The 2016 draft SED does only slightly better than the previous flawed SED in protecting beneficial uses and public trust assets in the Bay-Delta. As a result of the Water Board's mistaken application of both the law and the facts, the 2016 SED</p>	<p>The proposed flow and salinity objectives are consistent with the Clean Water Act. Section 303 of the Act requires the adoption of standards which "protect the public health or welfare, enhance the quality of water and serve the purposes of [the Clean Water Act]." The purposes of the Act are defined in Sections 101(a)(2) and 303(c). Section 101(a)(2) establishes a national goal, wherever attainable, of water quality "which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water...." Section 303(c) requires that water quality standards be established "taking into consideration [the] use and value [of navigable waters] for public water supplies, propagation of fish and</p>

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		<p>proposes a flow requirement of 30-50% of February-June unimpaired flow that will not protect beneficial uses.</p>	<p>wildlife, recreational purposes, and agricultural, industrial and other purposes, and also taking into consideration their use and value for navigation." The Clean Water Act regulations require the states to adopt "those water quality criteria that protect the designated use." 40 C.F.R. § 131.11. Water quality criteria (akin to water quality objectives under state law) are "constituent concentrations, levels, narrative statements, representing a quality of water that supports a particular use. 40 C.F.R. § 131.3(b). The criteria must be based on "sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use." 40 C.F.R. § 131.11. For waters with multiple use designations, the criteria must support the most sensitive use." Id.</p> <p>The proposed flow and salinity objectives are based on sound scientific rationale (see Appendices C and E) and contain sufficient parameters (e.g., numeric flow requirements and salinity levels) to protect fish and wildlife and agricultural uses. For more information on how the flow objectives protect fish and wildlife beneficial uses, please see Master Response 3.1, Fish Protection, and Chapters 7 and 19. Please see Master Response 3.3, Southern Delta Water Quality, and Appendix E for more information on how the proposed salinity objective protect agricultural beneficial uses. The objectives also support the most sensitive beneficial uses. For example, the plan amendments focus on flow to protect sensitive fish and wildlife that have been adversely affected by reduced flows. They also focus on and protect the most sensitive beneficial use affected by salinity, agriculture.</p> <p>The fact that the State Water Board is required to consider the factors in Water Code section 13241 is immaterial given that the proposed objectives will protect fish and wildlife and agricultural beneficial uses, in accordance with the Clean Water Act. Water Code section 13241 factors are required to be considered because the Porter-Cologne Water Quality Control Act recognizes that "it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses." (Wat. Code, § 13241.) This is consistent with the Clean Water Act and its implementing regulations—for example, the Clean Water Act regulations also allow some change in water quality as long as existing beneficial uses and the level of water quality necessary to protect these uses are maintained and protected. (See 40 C.F.R. § 131.12.)</p>
1184	9	<p>The SED compounds the problem of inadequate flow and temperature requirements by adding a totally flawed adaptive management program that stands in direct opposition to the whole concept of enforceable standards. Adaptive management moves the protections of beneficial uses to a future in which water users and government agencies will decide in a back room, on a yearly basis, what flow, temperature, and other conditions to apply. The CWA specifically subordinates impacts on water rights to the duty of the Water Board to provide sufficient water to address water quality requirements. The CWA requires the state to develop criteria to protect beneficial uses impacted by flow. The SED's proposed objectives would unlawfully reverse these CWA requirements.</p>	<p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding adaptive management and the bounds under which it may proceed.</p> <p>The Plan update establishes an adaptive range, 30 to 50 percent of unimpaired flow, in February through June. The adaptive implementation element of the program of implementation, allows for the most effective use of this water.</p> <p>Please see response to comment 1184-8.</p>
1184	10	<p>The preparation of the SED is governed by many different laws, including state CEQA guidelines, the Public Resources Code section 21159, the Porter-Cologne Act (in particular Water Code section 13241), and the federal Clean Water Act (as it applies to water quality standards promulgated by the Board). Further, portions of water quality control plans that fall under the jurisdiction of the CWA require approval by the U.S. Environmental Protection Agency. These various laws charge the Board with, among other things, reasonably describing and analyzing potentially significant direct and indirect environmental impacts of a project; describing and analyzing reasonably foreseeable methods of compliance with the regulatory requirements of each alternative; analyzing potentially feasible mitigation measures and the economic considerations of establishing objectives in water quality control plans; and analyzing related indirect and induced impacts on the regional economy</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the Clean Water Act, Porter-Cologne Act, and other authorities and regulations governing the water quality control planning process, as well as for a discussion of how the State Water Board is implementing its public trust duty with the proposed adoption and implementation of the plan amendments.</p>

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		<p>including estimating the total cost of implementing the water quality control program.</p> <p>In addition to the various laws mentioned above, governments have a permanent fiduciary responsibility and obligation to protect the public trust. [Footnote 10: Justice Racanelli wrote in 1986: "In the new light of National Audubon, the Board unquestionably possessed legal authority under the public trust doctrine to exercise supervision over appropriators in order to protect fish and wildlife. That important role was not conditioned on a recital of authority. It exists as a matter of law."] In National Audubon Society v. Superior Court, the California Supreme Court held that "the public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when abandonment of that right is consistent with the purposes of the trust." [Footnote 11: California Supreme Court, National Audubon Society, et al., v. The Superior Court of Alpine County and Department of Water and Power of the City of Los Angeles, et al. S.F. 24368. Filed February 17, 1983. Cited as 33 Cal.3d 419, (189 Cal.Rptr. 346, cert. denied, 464 U.S. 977), p. 441. Accessible online at http://www.monobasinresearch.org/images/legal/nassupct.htm.] The act of appropriating water is an acquisition of a property right from the waters of the state, an act that is therefore subject to regulation under the state's public trust responsibilities.</p> <p>The Sacramento-San Joaquin Bay-Delta is both a tideland and a marshland. Therefore the Board has authority to protect the Bay-Delta pursuant to the public trust. As an agency of the state, the Board is charged with ensuring that the state of California carries out its fiduciary responsibility to protect air, running water, the sea, and the seashore, "these things that are common to all." The board has invoked its public trust responsibilities in regulating the waters of California and acknowledges that the public trust is one of its ongoing regulatory responsibilities. [Footnote 12: State Water Resources Control Board, Mono Lake Basin Water Right Decision 1631: Decision and Order Amending Water Right Licenses to Establish Fishery Protection Flows in Streams Tributary to Mono Lake and to Protect Public Trust Resources at Mono Lake and in the Mono Lake Basin, September 28, 1994, 212 pages. Accessible online at: http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d1600_d1649/wrd1631.pdf.]</p> <p>The Board has also adopted regulations governing how it treats the public trust in matters of the appropriation of water in California. [Footnote 13: State Water Resources Control Board, California Code of Regulations, Title 23 Waters, Division 3 State Water Resources Control Board and Regional Water Quality Control Boards (Sections pertaining to water rights), January 2011, 168 pages. See Article 14, Standard Permit Terms and Conditions. Accessible online at http://www.swrcb.ca.gov/laws_regulations/docs/wrregs.pdf.] The Public Trust Doctrine provides that no one has a vested right to appropriate water in a manner harmful to the interests protected by the public trust. [Footnote 14: National Audubon Society, op. cit.] In accordance with this doctrine, California's constitution promises water rights only up to what is a reasonable use. No one has a right in California to use water unreasonably, not even the federal government. [Footnote 15: California Constitution, Article X, Section 2.]</p>	
1184	11	<p>The SED does not meet the requirements of CEQA. Although the SED is, by definition, a supplemental environmental document, the Board must comply with the requirements of the California Environmental Quality Act when adopting water quality control plans. Under</p>	<p>The SED is not a supplemental environmental document, but a substitute environmental document under the Board's certified regulatory program under CEQA. Please see Master Response 1.1, General Comments and the Executive Summary for the Board's CEQA obligations under its certified regulatory program. The SED</p>

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		<p>CEQA, a "project" to be analyzed is defined as "whole of an action" that would cause direct or reasonably foreseeable indirect physical environmental changes. [Footnote 16: CEQA Guidelines, §15378.]</p> <p>CEQA defines a "project" as plans or programs in which multiple actions are coordinated or facilitated within a framework of policies that govern the sequence or series of those actions. In performing CEQA analysis of a plan or program, then, agencies are prohibited from "piecemealing" or "segmenting" a project by splitting it into two or more segments. [Footnote 17: "This approach ensures 'that environmental considerations not become submerged by chopping a large project into many little ones, each with a potential impact on the environment, which cumulatively may have disastrous consequences.'" Burbank-Glendale-Pasadena Airport Authority v. Hensler (2d Dist. 1991) 233 Cal. App. 3d 577, 592 [284 Cal Rptr. 498], cited in Michael Remy, Tina A. Thomas, James G. Moore, and Whitman F. Manley, Guide To CEQA, 11th ed., Point Arena, CA: Solano Press Books, 2007, p. 89.] CEQA prohibits piecemealing because to segment a project can submerge the cumulative impact of individual environmental impacts.</p> <p>In Laurel Heights Improvement Association v. Regents of the University of California, (1988) 47 Cal. 3d 376, 396 the court declared that environmental reviews must "include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects."</p>	<p>appropriately considers the whole of the action and does not reflect piecemealed environmental review. Please see Master Response 1.2, Water Quality Control Planning Process, for response to comments that asserted that the Board improperly piecemealed or segmented environmental review.</p>
1184	12	<p>The SED fails to consider the whole of the action in the Sacramento-San Joaquin Bay-Delta. In preparation of the SED, the Board has segmented review of the San Joaquin River flow and south Delta salinity objectives from the rest of its activities updating the 2006 Bay-Delta Water Quality Control Plan. Specifically, the Board refers in descriptions of its planning process to Phase I being the revision of the flow and salinity objectives, while Phase II is the "comprehensive review" of the 2006 Bay-Delta Plan.</p> <p>The Board has also issued two separate notices of preparation (NOPs) for each segment of its planning process. [Footnote 18: State Water Resources Control Board, Notice of Preparation and of Scoping Meeting for Environmental Documentation for the Update and Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary: Southern Delta Salinity and San Joaquin River Flows, February 13, 2009, stated on p. 2: "The State Water Resources Control Board...will be the lead agency and will prepare environmental documentation for the potential update and changes to implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary... The proposed Project includes both: 1) the review and update of water quality objectives, including flow objectives, and the program of implementation in the Bay-Delta Plan; and 2) changes to water rights and water quality regulation consistent with the program of implementation. Accordingly, the environmental documentation will identify and evaluate the significant environmental impacts associated with potential changes to the Bay- Delta Plan and potential changes to water rights and other measures implementing the plan that may be needed to ensure the reasonable protection of beneficial uses in the Bay-Delta watershed."]</p> <p>In February of 2009, the Board issued a "Notice of Preparation" (hereinafter "NOP") entitled "Update and Implementation of the Water Quality Control Plan for the San Francisco Bay / Sacramento-San Joaquin Delta Estuary." The NOP proposed a project that would analyze</p>	<p>In the 2009 Notice of Preparation (NOP) and the 2011 Revised NOP, the State Water Board indicated that, given the broad scope of its water quality control planning efforts, it was initially focusing its review on the southern Delta salinity and San Joaquin River flow objectives and their implementation.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, for a further discussion of the water quality control planning process and Bay-Delta proceedings, including the NOPs and the State Water Board's protection of beneficial uses in the Bay-Delta and tributary watersheds through independent proceedings.</p> <p>Please see Master Response 1.1 for a discussion of the Delta Reform Act and the development of flow criteria for the Bay-Delta ecosystem.</p> <p>Please also see Master Response 1.2 and Master Response 3.1, Fish Benefits, for a discussion of the Delta Flow Criteria Report and how it relates to the plan amendments.</p>

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		<p>"the Bay-Delta watershed and its upstream tributaries and any reservoirs for which water may be used to meet the water quality objectives, including upstream reservoirs and San Luis Reservoir." The area of potential environmental effects encompassed most of the state, including the Bay-Delta watershed, the Trinity River watershed from which water is imported to the Bay-Delta watershed, and areas receiving water exported from the Bay-Delta watershed. [Footnote 19: Id., p. 3.]</p> <p>In November of 2009, the State Legislature passed Water Code § 85086 as part of the Delta Reform Act of 2009, which required the Board to develop new flow criteria to protect the public trust. [Footnote 20: The Delta Reform Act, November, 2009, states: "For the purpose of informing planning decisions for the Delta Plan and the Bay-Delta Conservation Plan [BDCP], the board shall, pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources. In carrying out this section, the board shall review existing water quality objectives and use the best available scientific information. The flow criteria for the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions. The flow criteria shall be developed in a public process by the board within nine months of the enactment of this division. The public process shall be in the form of an informational proceeding...and shall provide an opportunity for all interested persons to participate. The flow criteria shall not be considered predecisional with regard to any subsequent board consideration of a permit, including any permit in connection with a final BDCP."]</p> <p>Following extensive testimony, the Board drafted the 2010 Delta Flow Criteria Report, which acknowledged that determining flow criteria for the protection of public trust resources is necessary to "inform planning decisions for the Bay Delta Plan." [Footnote 21: State Water Resources Control Board, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, Prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009. Available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf. Approved in Resolution No. 2010-0039 (hereinafter cited as "2010 Delta Flow Criteria Report.")] The report identifies several flow criteria for the Sacramento and San Joaquin Rivers, as well as for Delta outflow. The report represents a comprehensive review of water quality objectives, a clear list of "species of importance" and their relevant life stages, an analysis of both beneficial uses and water quality objectives, and an analysis of the times in which water is most important to the health of individual species of fish. [Footnote 22: 2010 Delta Flow Criteria Report, Table 2, pp. 45-46.]</p> <p>Eight months after publishing the 2010 Delta Flow Criteria Report, the Board issued, on April 1, 2011, a "Revised Notice of Preparation and Notice of Additional Scoping Meeting," with the subtitle: "Update to the Water Quality Control Plan for the San Francisco Bay/Sacramento- San Joaquin Delta Estuary: Water Quality Objectives for the Protection of Southern Delta Agricultural Beneficial Uses; San Joaquin River Flow Objectives for the Protection of Fish and Wildlife Beneficial Uses; and the Program of Implementation for Those Objectives." [Footnote 23: State Water Resources Control Board, Revised Notice of Preparation and Notice of Additional Scoping Meeting, April 1, 2011. The Revised NOP is available at: http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/notice_sjr_flow_southern_delta_scoping_mtg_with_attachments.pdf]</p>	

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		<p>However, in this second notice, the Board dramatically limited the scope of review of the project to only two project areas: the south Delta, which encompasses both the service area of the South Delta Water Agency and the State and Federal export pumps, and the major tributaries of the lower San Joaquin River (the Merced, Tuolumne, and Stanislaus rivers), together with the lower San Joaquin River itself. [Footnote 24: Id.]</p> <p>This notice limits the purpose of the review to evaluation of southern Delta salinity and San Joaquin River flow objectives and their implementation through the Bay-Delta Plan under CEQA. [Footnote 25: Id., p. 3, "[the Board] is not currently considering any other changes to the Bay-Delta Plan or any specific changes to water rights and other requirements implementing the Bay-Delta Plan."] In January 2012, the Board issued a third NOP for the Bay-Delta Plan's Comprehensive Review, addressing all other elements of the Bay-Delta Plan and or potential changes to protect beneficial uses in the Bay-Delta other than San Joaquin river flows or South Delta salinity objectives. [Footnote 26: State Water Resources Control Board, Supplemental Notice of Preparation and Notice of Scoping Meeting for Environmental Documentation for the Update and Implementation of the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary: Comprehensive Review, January 24, 2012. Available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/pubnot042512.pdf Page 2 of this document states: "The State Water Board is not soliciting information regarding these [the San Joaquin River flow and South Delta salinity objective] potential amendments and related SED at this time."] In essence, what started in 2009 as a Board analysis of a "whole action" affecting the San Francisco/Sacramento-San Joaquin Bay Delta Estuary had become bifurcated by 2011.</p> <p>The segregation of the Sacramento River from the San Joaquin River is a complete departure from how the Board has historically analyzed Sacramento River and San Joaquin River water quality objectives. Dating back to at least 1978, the Board has always reviewed the Sacramento River and San Joaquin River water quality objectives in a unified way, as essential elements in the "whole of an action" undertaken as development of the Bay-Delta water quality control plan. [Footnote 27: See State Water Resources Control Board, Water Quality Control Plan, Sacramento-San Joaquin Delta and Suisun Marsh, August 1978, Table VI-1, p. VI-29; Water Quality Control Plan for Salinity, San Francisco Bay/Sacramento-San Joaquin Delta Estuary, 91-15WR, May 1991, Table 1-1; Water Quality Control Plan for Salinity, San Francisco Bay/Sacramento-San Joaquin Delta Estuary, 95-1WR, May 1995, Table 1; and Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, December 13, 2006, Tables 1 through 3. In each of these tables, it is evident that the Board considers and treats through regulation the flow and salinity objectives from both the Sacramento and San Joaquin Rivers simultaneously and together and not in a segmented fashion.] As recently as 2010, the Board considered the two river basins simultaneously. [Footnote 28: In the 2010 Delta Flow Criteria Report.]</p> <p>Further, consideration of Delta hydrodynamics is illogical without considering the Sacramento and San Joaquin rivers simultaneously. First, the hydrodynamics of the Delta are not readily segmented because the Sacramento and San Joaquin River inflows meet in the central and south Delta river channels and are intermingled with tidal flows coming east from the Carquinez Strait and Suisun Bay. Second, when considering water quality, inflows from the San Joaquin River must be analyzed because of their potential effect on waters reaching the central Delta and Old River channels, from which state and federal project pumps near Tracy draw water for exports. Third, the Sacramento River and San Joaquin</p>	

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		<p>River inflows jointly govern the timing and magnitude of salmon recruitment from the ocean and salmon smolt outmigration, as well as the degree to which conditions in the Bay-Delta estuary provide habitat for salmon, steelhead, and resident and migratory species like longfin smelt, Delta smelt, and striped bass. The first iteration of the SED (2012) accepted this bifurcation. The 2016 version of the SED continues it.</p>	
1184	13	<p>The SED fails to establish an accurate and complete baseline for the project. The appropriate baseline for this second SED issued by the Water Board to update the 2006 Water Quality Control plan should include the following: Water Rights Decision 1641 ("D-1641"), the 2009 Biological Opinions of the USFWS and NMPS, and the analysis of the necessary flows required by the Delta Reform Act contained in the 2010 Delta Flow Criteria Report and in the corresponding California Department of Fish & Wildlife report on the needs of the state listed species in the Bay-Delta.</p> <p>It should also include recent reports of state and federal fish agencies that document adverse effects to fisheries that occurred during the recent five-year drought, including the effects of the suspension of the protections of D-1641 and other protective orders under the Governor's drought emergency proclamations, and the effects of the Water Board's relaxation of flow requirements in various TUCP orders issued in response to requests by operators of the State Water Project and the Central Valley Project. The SED describes only some of these elements as part of the baseline.</p> <p>The description of the baseline on page ES-51 of the SED does not adequately describe the over-appropriation of surface water in the San Joaquin basin as a baseline condition. This condition is the major reason that previous water quality standards have so woefully failed in the watershed. While Chapter 9 of the SED generally describes the overdraft of groundwater and identifies it as part of the baseline condition, the 2016 SED continues the State Board's decades-long refusal to disclose and analyze the over-appropriation of San Joaquin River water for agricultural use at the expense of the environment. None of the alternatives considered in the SED address this over-appropriation for what it is: the foremost problem in the watershed. The baseline for the SED also includes a vestige of the previous water quality control plan, the Vernalis Adaptive Management Program (VAMP) experiment, which failed and which has been over for years. For purposes of analysis, VAMP should be removed from the baseline.</p>	<p>Please see Master Response 2.5, Baseline and No Project, for general information regarding the baseline, and a discussion on why VAMP was included in the baseline and how impacts without VAMP were included in the No Project analysis.</p> <p>Please see Master Response 3.2, Surface Water Analyses and Modeling, for information about modeling as it relates to baseline, and how the SED analyzed drought conditions.</p> <p>Chapter 7, Aquatic Resources, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, discuss studies conducted on fish species in the tributaries and LSJR, which serve to establish baseline conditions for the fisheries in these rivers. In addition, the modeling conducted to evaluate impacts in Chapter 7 and benefits in Chapter 19 provides results over the 82-year period of record that includes droughts. As described in Chapter 21, Drought Evaluation, the State Water Board extended the Water Supply Effects (WSE) model to evaluate the most recent drought; the evaluation confirms the droughts captured in the model results are representative of the most recent drought (See the annual runoff information for the three LSJR tributaries in Tables 21-1, 21-2, and 21-3). Please see Master Response 1.2, Water Quality Control Planning Process, for information regarding the plan amendments and water rights proceedings.</p> <p>Chapter 9, Groundwater Resources, identifies the legacy overdraft issues from extensive agricultural pumping in the plan area. Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act [SGMA], for a discussion on groundwater sustainability in the context of the plan amendments.</p>
1184	14	<p>The SED does not define its proposed project. Appendix K ("Revised Water Quality Control Plan") of the SED defines the proposed Project under CEQA. Appendix K proposes changes to water quality objectives at Table 2 (Water Quality Objectives for Agricultural Beneficial Uses), pp. 15-16, and Table 3 (Water Quality Objectives for Fish and Wildlife Beneficial Uses), pp. 17-21. Substantively, the Appendix K proposes changes to objectives for agricultural beneficial uses that would change the compliance locations from three existing south Delta water quality stations (San Joaquin River at Brandt Bridge, Old River near Middle River, and Old River at Tracy Road Bridge) to three reaches of river (San Joaquin river between Vernalis and Brandt Bridge, Old River from Middle River to Victoria Canal, and Old River/Grant Line Canal from 11 Head to West Canal). Appendix K also proposes changes to the April through August numeric salinity requirement at these locations and at San Joaquin River at Airport Bridge Way, Vernalis from .7 mmhos to 1.0 dS/m/m. [Footnote 29: SED, Appendix K, p. 15.]</p> <p>Substantively, Appendix K proposes changes to objectives for fish and wildlife beneficial</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for response to comments regarding the project description, program of implementation, adaptive implementation, STM working group, biological goals, and the San Joaquin Monitoring and Evaluation Program.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, for an explanation of the scope of the plan amendments and the distinction between objectives and the program of implementation in the Bay-Delta Plan and implementing objectives through water rights proceedings and other methods such as water quality certification. A Clean Water Section 303(d) impairment listing means that total maximum daily load is appropriate, not that water quality objectives must be adopted. (See 33 U.S.C. § 1313, subd. (d).) With respect to the temperature listings for the San Joaquin tributaries, the proposed flow objectives will assist with improving temperatures, as analyzed in Chapter 19. The commenter cites to elements of the program of implementation in the 2006 Bay-Delta Plan such as Delta outflow, Sacramento River flows, export limits, Delta Cross Channel Gate operations; however, these actions are not being revised with the plan amendments and they continue to be in effect to implement the water quality objectives in the Bay-</p>

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		<p>uses that would change the objectives for Lower San Joaquin River flows. These changes would eliminate the D-1641 San Joaquin River flow requirements and substitute a narrative objective, a San Joaquin River flow objective requiring "[a] percent of unimpaired flow between 30%-50%, inclusive, from each of the Stanislaus, Tuolumne, and Merced Rivers shall be maintained from February through June," and a minimum February through June San Joaquin River at Vernalis flow requirement of between 800 and 1200 cfs if the required percent of unimpaired flow should drop below those values. [Footnote 30: Id., p. 18.] All three San Joaquin tributaries are listed under Clean Water Act Section 303(d) as impaired for water temperature. However, proposed objectives for water temperature are absent from Appendix K, which should have explicitly set water temperature objectives in the process of setting standards. Attachment 1 [ATT2] to these comments suggests a scientific basis by which the Board could set such standards.</p> <p>Appendix K proposes extensive additions to the Program of Implementation, pp. 26-64. Insofar as it addresses the implementation of Lower San Joaquin River flow objectives, the description of the Program of Implementation states various authorities that the Board may employ. Among the authorities are water rights and water quality authorities (including Section 401 of the Clean Water Act).</p> <p>The description of the Program of Implementation also states a suite of elements that the Board may consider, including Delta outflow, Sacramento River at Rio Vista flow, Lower San Joaquin River flow, export limits, Delta Cross Channel Gates operation, and salinity. [Footnote 31: Id., p. 28.] However, the Board defers Delta outflow, Sacramento River flow, export limits and Cross Channel Gates operation to Phase II of the update of the Water Quality Control Plan, noting for the moment its water rights authority. Appendix K extensively discusses implementation of the Lower San Joaquin River flow objectives and southern Delta salinity objectives. [Footnote 32: We discuss proposed changes to southern Delta salinity objectives separately.]</p> <p>Appendix K describes a suite of elements that the Board it may include in the program of implementation for the Lower San Joaquin River flow objectives. First: "When implementing the LSJR flow objectives, the State Water Board will include minimum reservoir carryover storage targets or other requirements to help ensure that providing flows to meet the flow objectives will not have adverse temperature or other impacts on fish and wildlife or, if feasible, on other beneficial uses." [Footnote 33: Id., p. 28.] In addition: "The LSJR flow objectives for February through June shall be implemented by requiring 40 percent of unimpaired flow, based on a minimum 7-day running average, from each of the Stanislaus, Tuolumne, and Merced Rivers. This required percentage of unimpaired flow, however, may be adjusted within the range allowed by the LSJR flow objectives through adaptive methods detailed below." [Footnote 34: Id., p. 29.]</p> <p>Appendix K's description of the Program of Implementation also describes four elements of "Adaptive Implementation," and how those elements may be combined:</p> <p>"a) The required percent of unimpaired flow may be adjusted to any value between 30 percent and 50 percent, inclusive...</p> <p>b) The required percent of unimpaired flow for February through June may be managed as a total volume of water and released on an adaptive schedule...</p> <p>c) The release of a portion of the February through June unimpaired flow may be delayed</p>	<p>Delta Plan.</p> <p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments regarding adaptive methods, STM working group, and examples of operations plans.</p>

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		<p>until after June to prevent adverse effects to fisheries, including temperature...</p> <p>d) The required base flow for February through June may be adjusted to any value between 800 and 1,200 cfs, inclusive...</p> <p>Any of the adjustments in (a)-(d) above may be made independently of each other or combined. The adjustments in (a), (b), and (c) may also be made independently on each of the Stanislaus, Tuolumne, and Merced Rivers, so long as the flows are coordinated to achieve beneficial results in the LSJR related to the protection of fish and wildlife beneficial uses." [Footnote 35: Id., p. 30.]</p> <p>The description of the Program of Implementation proposes to create a "Stanislaus, Tuolumne and Merced [STM] Working Group" to execute "adaptive implementation":</p> <p>"The State Water Board will establish a STM Working Group to assist with the implementation, monitoring and effectiveness assessment of the February through June LSJR flow requirements. Specifically, the State Water Board will seek recommendations from the STM Working Group on biological goals; procedures for implementing the adaptive methods described above; annual adaptive operations plans; and the SJRMEP, including special studies and reporting requirements. Each of these activities is described in more detail below.</p> <p>"The State Water Board will seek participation in the STM Working Group by the following entities who have expertise in LSJR, Stanislaus, Tuolumne, and Merced Rivers fisheries management, hydrology, operations, and monitoring and assessment needs: the DFW; NMFS; USFWS; and water users on the Stanislaus, Tuolumne, and Merced Rivers. The STM Working Group will also include State Water Board staff and may include any other persons or entities the Executive Director determines to have appropriate expertise. Subgroups of the STM Working Group may be formed as appropriate and State Water Board staff may also initiate activities in coordination with members of the STM Working Group." [Footnote 36: Id., p. 32.]</p>	
1184	15	<p>In modeling various alternatives, the Board staff made certain assumptions that it describes in Modeling Appendix F, pp. F.1-31 to F.1-33. The Modeling Appendix states:</p> <p>"The analysis contained in this SED provides LSJR alternatives that represent examples of system operation to determine the significance of impacts, pursuant to CEQA. Selection of appropriate parameters has first been made to represent baseline conditions most closely in terms of diversion allocations and reservoir operations, similar to those in the CALSIM baseline scenario. Under additional streamflow requirements of the LSJR alternatives, changes in water availability require adjustment of parameters to ensure feasibility for the 82-year simulation so that the reservoirs are not drained entirely in the worst droughts of record. In addition, carryover storage guidelines have been increased for New Melones Reservoir and New Exchequer Reservoir to minimize impacts on instream temperature that would be caused by lower reservoir levels and a limited coldwater pool. These operational constraints, as components of modeling simulations, do not by themselves comprise a plan of implementation or otherwise carry the weight of regulatory requirements. Rather, they are included as elements of the modeling simulation to evaluate the feasibility of the LSJR alternatives. An implementation plan developed in a future proceeding would need to identify and evaluate supply, storage, and temperature conditions and appropriate operational objectives, to best protect beneficial uses and avoid adverse effects where</p>	<p>Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the Water Supply Effects (WSE) model, the assumptions used, and the conceptual representation of the plan amendments by the WSE model. The modeling assumptions in the SED are sufficient to permit an analysis of the potential environmental impacts of adopting the plan amendments. The State Water Board did not simply choose just any example of diversions, carryover storage and water temperature requirements in analyzing the effects of the plan amendment or engage in "after-the-fact" modeling; rather, it made reasonable and credible assumptions that provide a reasonable and realistic representation of system operations in response to implementation of the plan amendments to properly evaluate impacts under CEQA. The italicized quoted language from Appendix F is incorrect as the beginning of that paragraph makes clear that the SED's analysis is to describe the significance of impacts under CEQA. It has been revised to state, "Rather, they are included as elements of the modeling simulation to evaluate the impacts of the LSJR alternatives." The last sentence has also been modified to clarify that "Implementation in a future proceeding would need to identify and evaluate supply, storage, and temperature conditions and appropriate operational objectives, to best protect beneficial uses and avoid adverse effects where feasible." Master Response 3.2 also responds to the commenter's criticism that perfect foresight is required in the SED's model.</p> <p>Please see Master Response 1.1, General Comments, and Master Response 3.2, regarding a discussion of the programmatic analyses within the SED and why a project-level analysis that shows exactly how operators</p>

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		<p>feasible." [Footnote 37: SED Appendix F, p. F.1-31.]</p> <p>It is not enough under CEQA to demonstrate the feasibility of project alternatives. Rather, one must analyze the impacts of various project alternatives. Appendix K does not discuss diversion allocations at all, and discusses carryover storage and temperature targets as something the Board will develop in the future. It discusses biological objectives only as something that the "STM Working Group" will develop in the future, substituting process for substance. Yet all of these factors are crucial in disclosing impacts. Carryover storage requirements may mitigate water temperature conditions that could otherwise be worsened by increasing flows while maintaining existing levels of diversion allocations. Carryover storage requirements would thus either require reduction of diversion allocations or reduction of instream flow. Water temperature targets could affect the levels of carryover storage needed to achieve them; this could in turn further affect diversion allocations.</p> <p>In short, it is not enough to choose one example of diversion allocations, carryover storage and water temperature requirements, and analyze flow alternatives using this example. Different values for these three elements will cause different impacts of project alternatives. While "an implementation plan [must be] developed in a future proceeding," and may be subject to a project CEQA analysis, the program CEQA analysis must evaluate a menu of different values and explain the relative impacts. Absent such analysis, the program CEQA analysis is so vague that it is useless in aiding reasoned decision making.</p> <p>In fact, the modeling effort to "ensure feasibility" looks rather at an after-the-fact modeling effort that uses perfect foresight to reduce impacts as much as possible: the opposite of disclosing impacts of various potential choices for system operation. As a practical matter, one could not operate the system as the SED models it. In the "example" modeling for SED Alternatives 3 and 4, the modelers achieve reduction of impacts by "flow shifting:" moving water from spring flow to later in the year to mitigate water temperature impacts (which themselves are not specified by threshold or target values). [Footnote 38: Although SED Appendix K allows "adaptive implementation" of Alternative 2, modeling in support of the SED includes no "flow shifting" for Alternative 2. Thus this aspect of the modeling for Alternatives 2 and for Alternatives 3 and 4 are fundamentally different.]</p> <p>But the "STM Working Group" cannot know in January, when it is supposed to propose an operating plan for the water year [Footnote 39: SED Appendix K, p. 34.], what hydrology over the next five months will be. It will not know what inflows will be, what storage will be, what flows will be, or what diversion allocations will be. It will not know what summer meteorology will be. It will not know what percent of water to allocate for later in the year or how much water that percent will amount to in acre-feet.</p>	<p>will respond to the plan amendments is not possible.</p> <p>Please see Master Response 2.2, Adaptive Implementation, regarding the process for adaptive implementation, which allows the magnitude and timing of flows to be adjusted in a number of ways, within a prescribed range of flows, to enhance the biological benefits.</p> <p>Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the reasonable range of feasible alternatives required to be evaluated in CEQA documents.</p>
1184	16	<p>While the modeling for the present, recirculated SED makes numerous refinements and improvements over the modeling performed for the 2012 version of the SED [Footnote 40: See SED Appendix F.1, Table F.1.2-3 and pp. F.1-12 to F.1-13 for detailed description of modeling changes.], the use of modeling in the recirculated SED retains a basic flaw. Rather than defining a project, options for implementing the project, project impacts, and potential mitigations for these impacts in accordance with CEQA, the SED performs modeling whose apparent purpose is to achieve the desired result of an impacts analysis. Rather than use the SED to support the project and modeling to support the SED, the SED purports to make a key finding using modeling while requiring future actions to define the actual project, part</p>	<p>Please refer to Master Response 3.2, Surface Water Analyses and Modeling for a discussion of the reasonableness of the assumptions included in the WSE model. Please also see Master Response 1.2, Water Quality Control Process, for a discussion explaining how through the program of implementation, the State Water Board establishes a framework for achieving the proposed water quality objectives and how responsibility for achieving the objectives will be imposed through future proceedings.</p>

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		of whose goal is to achieve this key finding.	
1184	17	To actually implement flow objectives, carryover storage targets and diversion allocations, operators on each tributary would have to iteratively evaluate, from about January through June, storage, inflow, runoff and (potentially) water-year types to define and meet each of these elements. That implementation contains an inherent level of uncertainty and risk management, which in themselves create a sometimes substantial margin of error and potential impacts. The actual art of reservoir operation is lost in a modeling exercise that assumes perfect foresight.	Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding reservoir operations assumptions and carryover storage.
1184	18	<p>To determine potential mitigation for thermal impacts of increased spring flow, the SED should have defined and evaluated various requirements for flow, carryover storage, and diversion allocations on each tributary against various target thermal conditions at various locations. Based on this analysis, the SED should have proposed a mitigation package including summer flow requirements to mitigate thermal impacts of the combined impacts of flow, carryover storage and diversion allocations. In addition, the SED should have decoupled the February-June flow requirement from the summer flow requirement.</p> <p>One cannot evaluate whether the February-June flow objectives will achieve desired biological goals in their own right if in any or all years the STM Working Group can, in the name of "adaptive implementation," reduce those flow objectives to achieve summer thermal targets. This rob- Peter-to-pay-Paul paradigm likely also understates impacts to water supply: to actually mitigate summer thermal conditions without having the benefit of perfect foresight, operators will need to devote additional water to summer flows, making less water available for carryover storage, diversion allocations, or both.</p>	<p>Please see Master Response 2.2, Adaptive Implementation, for responses to comments regarding flow shifting and temperature conditions. The flow shifting component of adaptive implementation recognizes that there can be no perfect foresight about specific future needs and that tightly constrained requirements could lead to undesirable outcomes. The LSJR numeric flow objectives must be implemented in a manner that achieves the LSJR narrative objective. Please see Appendix F.1, Hydrologic and Water Quality Modeling, for a description of flow shifting in modeling for estimating impacts from LSJR alternatives. Please refer to the section describing adaptive implementation and flow shifting.</p> <p>The SED estimates and discloses potential benefits and impacts of the February–June LSJR flow objectives, which include adaptive implementation and flow shifting. Please see Appendix F.1, Hydrologic and Water Quality Modeling, for modeling results regarding reservoir storage, river flows, and river temperature for alternatives that include flow shifting. Please see Chapter 18, Summary of Impacts and Comparison of Alternatives, for a comparison of LSJR alternatives with and without adaptive implementation (which includes flow shifting).</p>
1184	19	<p>The SED should have analyzed a suite of alternatives for Delta export operations [Footnote 41: The SED analyzes the effect of Lower San Joaquin River Flow objectives on the availability of water for export (Appendix F.1, Section F.1.7). It does not analyze how various export scenarios combine with flow objectives to affect salinity or how different export scenarios affect the performance of flow objectives in improving conditions for fish and wildlife.] in order to evaluate both the benefits to fish [Footnote 42: "The State Water Board will exercise its water right and water quality authority to help ensure that the flows required to meet the LSJR flow objectives are used for their intended purpose and are not diverted for other purposes." Id., p. 28. "Although the lowest downstream compliance location for the LSJR flow objectives is at Vernalis, the objectives are intended to protect migratory LSJR fish in a larger area, including within the Delta, where fish that migrate to or from the LSJR watershed depend on adequate flows from the LSJR and its salmon-bearing tributaries." Id., pp. 28-29. There is simply no way to evaluate the potential effectiveness of the flow objectives in terms of what is "intended" without analyzing what happens in the Delta. The Lower San Joaquin River flow objectives are intended to protect fish and wildlife beneficial uses. One cannot prevent Lower San Joaquin River flows from being "diverted for other purposes" without explicitly limiting exports.] and the salinity impacts of increased February-June Lower San Joaquin Flow objectives.</p> <p>While the Board may condition export operations (potentially including OMR requirements) in a future proceeding [Footnote 43: Id., p. 39.], without evaluating their effect one cannot evaluate the fisheries benefits and the salinity impacts of the Lower San Joaquin Flow objectives that the Board is proposing now. It accomplishes little to improve conditions for aquatic life in the San Joaquin River if out-migrating salmon cannot reach Chipps Island and</p>	<p>Please refer to Master Response 1.2, Water Quality Control Planning Process for a discussion regarding the scope of the Bay-Delta Proceedings and why the State Water Board has exercised its discretion to focus on the Lower San Joaquin River and eastside tributaries in the plan amendments. Export restrictions are not being changed in response to implementation of the plan amendments and, therefore, the State Water Board did not need to analyze various export scenarios. In addition, CEQA requires an evaluation of a reasonable range of alternatives that meet most of the basic objectives of the project but would avoid or substantially lessen any of the significant impacts of a project. (Cal. Code Regs., tit. 14, § 15126.6, subd. (a).) The commenter does not explain how analyzing a suite of export alternatives as alternatives to the plan amendments would meet the goals of the project and reduce or avoid significant environmental impacts of the plan amendments.</p> <p>The benefits to fish and wildlife from the plan amendments can be and have been analyzed in the SED in Chapters 7 and 19. Please also see Master Response 3.1, Protection of Fish and Wildlife for more information on how the plan amendments will protect fish and wildlife beneficial uses. Please also see Master Response 2.1, Amendments to Water Quality Control Plan, for how migratory pathways for LSJR salmonids will be protected even without export conditions. For example, the analysis in Appendix F.1 indicates that under Alternative 3, about 74 percent of the average annual increase in flow at Vernalis would go toward an increase in Delta outflow. Twenty-six percent would go toward exports; however, the annual average change is a small increase compared to historical exports. Chapter 7 analyzes the potential changes in fish entrainment risk and estuarine habitat conditions resulting from changes in LSJR inflows and export pumping and concludes impacts would be less than significant. Salinity impacts have likewise been evaluated. Please see Chapters 5, 7 and 23, as well as Master Response 3.3, Southern Delta Water Quality, for impacts related to salinity. Please refer to Master Response 2.5, Baseline and No Project of a discussion regarding the inclusion of the USFWS and NFMS Biological Opinions.</p>

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		<p>the sea. Particle tracking, EC tracking and fish tagging studies all demonstrate that San Joaquin River water and salmon smolts are drawn to the state and federal project pumps.</p> <p>As written, Appendix K leaves intact the allowance that the SWP and CVP may collectively export the entire inflow of the San Joaquin River from April 15 through May 15, or another 30-day period determined by a committee, and allows even greater export of San Joaquin flow at other times. [Footnote 44: Id., top of p.19. The Biological Opinions for the long-term operation of the State Water Project and the Central Valley Project contain additional export restrictions. However, NMFS and USFWS have reinitiated consultation for these operations. The Board should not rely on export restrictions in Biological Opinions to protect beneficial uses, particularly in an era where stated federal policy is to favor exports over aquatic protections.] This also has water supply and in some cases salinity impacts to tributary and lower San Joaquin water users, to Delta water users and other in-Delta diverters (such as Contra Costa Water District), to export water users, and indirectly to Sacramento River and Sacramento River tributary water users.</p>	<p>The primary focus of Appendix K's statement that the State Water Board will use its authorities "to help ensure that flows required to meet the LSJR flow objectives are used for their intended purpose and are not diverted for other uses" is to prevent unauthorized diversions on the LSJR and its tributaries. It is thus inaccurate to say this language compels explicitly limiting exports. Appendix K does, however, state that while the lowest compliance location for the LSJR flow objectives is at Vernalis, the objectives are "intended to protect migratory LSJR fish in a larger area, including the Delta, where fish that migrate to or from the LSJR watershed depend on adequate flows from the LSJR and its salmon-bearing tributaries." Modeling shows that increased LSJR flows will make it through the Delta, meaning the increased LSJR flows will protect migratory LSJR fish in a larger area. The SED acknowledges and analyzes that a relatively small amount of LSJR flows will be exported, but increased LSJR flows will contribute more to Delta outflow, as explained above. So while the State Water Board has chosen not to change export restrictions with the plan amendments, especially in light of what the modeling shows, it is separately doing a review of the 2006 Bay-Delta Plan as it relates to other geographic areas of the Bay-Delta and its tributaries and through that process will determine and study what changes, if any, should be made to the export restrictions as part of that independent effort.</p>
1184	20	<p>The SED should have analyzed a suite of operational constraints and scenarios for impacts to the water supply of the City and County of San Francisco and its wholesale customers (collectively, CCSF). [Footnote 45: CSPA and others suggested many options in a letter to the Board dated October 8, 2014. We incorporate that letter by reference. It is already in the record for this proceeding and is available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/review/docs/100814_resp2ccsf_sedimpacts.pdf]</p> <p>Instead, the SED [Footnote 46: See SED, Appendix L.] assumes that CCSF will have to provide about 52% of any required flow increase in the Tuolumne River pursuant to the Fourth Agreement between CCSF and Turlock and Modesto irrigation districts (TID and MID). It evaluates two scenarios for drawing on the Water Bank to which CCSF has contractual rights in Don Pedro Reservoir, and it otherwise assumes that CCSF will purchase water from TID and or MID, despite the apparent lack of willingness of these entities to sell. These limited scenarios are supposed to be representative examples of how CCSF might respond to increased flow requirements in the Tuolumne River, but they capture only a narrow range of potential impacts and do little to inform decision making about how the Board or CCSF might reduce or mitigate water supply impacts to CCSF.</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, for a discussion of concerns related to how CCSF may respond to potential water supply reductions if the plan amendments were implemented.</p>
1184	21	<p>Appendix K announces that during a "State of Emergency," the Board on its own motion or any affected party can petition the State Board for a temporary change in the implementation of the Lower San Joaquin Flow objectives:</p> <p>"At its discretion, or at the request of any affected responsible agency or person, the State Water Board may authorize a temporary change in the implementation of the LSJR flow objectives in a water right proceeding if the State Water Board determines that either (i) there is an emergency as defined in the California Environmental Quality Act (Pub. Resources Code, § 21060.3) or (ii) the Governor of the State of California or a local governing body has declared a state or local emergency pursuant to the California Emergency Services Act (Gov. Code, § 8550 et seq.) and LSJR flow requirements affect or are affected by the conditions of such emergency. Before authorizing any temporary change, the State Water Board must find that measures will be taken to reasonably protect the fish</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for response to comments regarding the emergency provisions in Appendix K, Revised Water Quality Control Plan.</p>

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		<p>and wildlife beneficial use in light of the circumstances of the emergency."</p> <p>There is no definition in Schedule K of what might constitute a state of emergency. It leaves it to politicians, without any objective reference, to determine the conditions under which implementation of water quality objectives may be open to suspension. Recent history in 2007-2009 and 2013-2016 suggests that a sequence of two consecutive dry years followed by a dry autumn is likely to trigger such an "emergency." The categorical exception places no sideboards or objective criteria by which the State Board may "find that measures will be taken to reasonably protect the fish and wildlife beneficial use." The "State of Emergency" exception does not define the type of proceeding that the Board will employ to "authorize a temporary change," including whether it will hold a hearing or whether that hearing will be evidentiary in nature. Based on 2014-2016, it is reasonable to assume that the Board will hold no evidentiary hearing in such instances. Considering that 41 of the past 100 years have been part of drought sequences, Appendix K thus fails to provide any definition whatever for the proposed project in roughly 25% of all years.</p>	
1184	22	<p>The SED does not analyze a reasonable range of alternatives. The alternatives for Lower San Joaquin Flow objectives proposed in Schedule K are incomplete. The alternatives are stated as a range of flows: No Project; Alternative 2 (20-30% of February-June unimpaired flow); Alternative 3 (30-50% of February-June unimpaired flow); and Alternative 4 (50-60% of February-June unimpaired flow). However, these alternatives do not specify diversion allocations, carryover storage and water temperature requirements. They allow unspecified off-ramps in about 25% of all years. They do not evaluate beneficial effects or impacts under different scenarios that vary export constraints. They do not specify the biological goals against which their effectiveness will be measured. They do not specify water temperature objectives. They do not consider a reasonable range of options for limiting or mitigating the impacts to CCSF. For these reasons, they are not complete alternatives and cannot serve to evaluate impacts or benefits in a reasoned fashion.</p>	<p>Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the reasonable range of feasible alternatives evaluated in the SED and information regarding commenter proposed alternatives. Please see Master Response 1.2, Water Quality Control Planning Process, regarding the planning process the State Water Board is undertaking and how that planning process is separate from the implementation (e.g., water rights hearing) process. See also Master Response 1.2 regarding including the State Water Board's protection of beneficial uses in the Bay-Delta and tributary watersheds through independent proceedings and Master Response 1.1, General Comments, for a discussion regarding the State Water Project and exports. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of the plan amendments, the establishment of biological goals and the use of temperature associated with the biological goals, carryover as it relates to the program of implementation, and the science and policy justification for the plan amendments. Please see Master Response 2.2, Adaptive Implementation, regarding the incorporation of adaptive implementation into the plan amendments such that the temperature attributes can be adjusted to allow for changing conditions. Please see Master Response 3.1, Fish Protection, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, for a discussion of expected beneficial effects in response to implementation of the plan amendments. Please also see response to comment 1184-15 and 1184-19.</p>
1184	23	<p>The alternatives for Lower San Joaquin Flow objectives proposed in Schedule K are unclear. They are listed as a range of flows that the STM Working Group will recommend and which operators will implement following approval by the State Water Board or its Executive Director. The alternatives are stated as a range of flows: No Project; Alternative 2 (20-30% of February-June unimpaired flow); Alternative 3 (30-50% of February-June unimpaired flow); and Alternative 4 (50-60% of February-June unimpaired flow). Alternatives 2, 3 and 4 would also have a February-June floor flow value at Vernalis of 1000 cfs (subject to adjustment as described below). In addition, alternatives 2, 3 and 4 are subject to "adaptive implementation."</p> <p>Adaptive implementation includes the opportunity for the STM Working Group to adjust the objectives in the following ways: adjust the percentage of unimpaired or down; implement the percent of unimpaired as a 7-day running average or to aggregate the total quantity of water into blocks; use some of the total volume of water in months outside of the February-June period ("flow shifting"); and adjust the 1000 cfs floor Vernalis flow value up or down within a range of 800 cfs to 1200 cfs. [Footnote 47: Id., p. 30. While a change in the February-June percent of unimpaired and in the floor flow value for Vernalis require</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of the plan amendments, clarifications of the Executive Director role, and clarifications of the role and responsibility of the STM working group. Please see Master Response 2.2, Adaptive Implementation, regarding the implementation of adaptive implementation in response to implementation of the plan amendments.</p>

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		<p>unanimous agreement of the STM Working Group and the approval of the Board’s Executive Director, a change to a block flow approach or for flow shifting to other months requires only the recommendation of one Working Group member and the approval of the Executive Director. Id., pp. 30-31.]</p>	
1184	24	<p>Appendix K offers no guidance on how the STM Working Group, composed of water user, fishery agency, and State Board staff, and perhaps others at the discretion of the Board’s Executive Director, will make its decisions. Appendix K provides no objective basis on which to base these decisions. The "adaptive implementation" group is supposed to make its own rules and set its own biological goals, the latter of which the Board will approve in the future. While Appendix K recommends starting at 40%, there is nothing to prevent the STM Working Group from seeking to change that percentage on day 2. Conservation and public interest groups assume that the STM Working Group will quickly seek modify the figure to the minimum; water users appear to assume that the STM Working Group will equally quickly seek to modify the figure to the maximum. Each type of entity will perform analysis for these comments that reflect these assumptions.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding the STM working group, biological goals, and adaptive management and the bounds under which it may proceed.</p> <p>The State Water Board will establish the STM Working Group to assist the Board with the implementation, monitoring and effectiveness assessment of the flow objectives. It is an advisory body whose specific governance will be determined by the working group. Whatever recommendations and agreements it comes to must be approved by the State Water Board or its Executive Director, as provided in Appendix K, in accordance with the criteria set forth therein for adaptive adjustments.</p>
1184	25	<p>State Board staff’s 2010 Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem (hereinafter, 2010 Delta Flow Criteria Report) emphasized the importance of variability in flow patterns as a cornerstone of the benefits of flow and good flow management:</p> <p>"Flow related factors that affect public trust resources include more than just volumes of inflow and outflow and no single rate of flow can protect all public trust resources at all times. The frequency, timing, duration, and rate of change of flows, the tides, and the occurrence of overbank flows, all are important. Seasonal, interannual, and spatial variability in flows, to which native species are adapted, are as important as the quantity of flow. Biological responses to flows rest on combinations of quantity, timing, duration, frequency and how these inputs vary spatially in the context of a Delta that is geometrically complex, highly altered by humans, and fundamentally tidally driven." [Footnote 48: 2010 Delta Flow Criteria Report, p. 40. Note that this paragraph also responds to the argument that has been almost universally adopted by water users in the update of the Water Quality Control Plan: that replicating the natural hydrograph is somehow less valid in an altered system. The 2010 Report on the contrary affirms that replicating the natural hydrograph is all the more important because of the level of system disturbance.]</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, and Master Response 3.1, Fish Protection, for information regarding the Delta Flow Criteria Report and how it relates to the plan amendments.</p> <p>Please also see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for information regarding how the LSJR flow objective reflects the natural hydrograph and how the program of implementation will allow the flows to be shaped to enhance the benefits of the natural hydrograph.</p>
1184	26	<p>The Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives (February, 2012; "SJ Technical Report") noted:</p> <p>"The State Water Board has determined that higher and more variable inflows during the February through June time frame are needed to support existing salmon and steelhead populations in the major SJR tributaries to the southern Delta at Vernalis. This will provide greater connectivity to the Delta and will more closely mimic the flow regime to which native migratory fish are adapted. Water needed to support sustainable salmonid populations at Vernalis should be provided on a generally proportional basis from the major SJR tributaries (Stanislaus, Tuolumne, and Merced Rivers). [Footnote 49: SED Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives (February, 2012; updated June, 2016). p. 3-1.]</p> <p>"...A more natural flow regime is anticipated to improve a number of ecosystem attributes such as (but not limited to): 1) native fish communities; 2) food web; 3) habitat; 4)</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding the STM working group, biological goals, and adaptive management and the bounds under which it may proceed.</p> <p>Adaptive implementation does not replace the required unimpaired flow percent. Instead it builds upon the basic premise of providing more flow of a more natural pattern. Adaptive implementation increases flows overall, compared to baseline, and adds flexibility to get the biggest benefit from the increased flows. Adaptive implementation is also described in Master Response 2.2, Adaptive Implementation, including what the Executive Director can approve and the criteria under which she acts.</p> <p>Any changes only apply to time periods that are approved, and thereafter revert to the unimpaired flow requirement in Table 3.</p>

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		<p>geomorphic processes; 5) temperature; and 6) water quality." [Footnote 50: Id, p. 3-41.]</p> <p>Adaptive implementation allows this cornerstone to be immediately thrown out the window in favor of engineered flow. Equally, any STM Working Group member can recommend that the Board's Executive Director move water into months outside the February-June period. It is also unclear whether changes become new defaults going forward or whether the defaults revert to original conditions at the end of each water year.</p>	
1184	27	<p>In his presentation in the January 3, 2017 hearing on the SED, Donald Ratcliff of the U.S. Fish & Wildlife Service showed that averaging flow even over seven days limits the benefits of replicating the unimpaired hydrograph by applying a percent of unimpaired flow from February through June. [Footnote 51: Presentation of Donald Ratcliff, US Fish and Wildlife Service, January 3, 2017. See slide 4. Available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/workshop_presentations/01032017_usfws.pdf]</p> <p>In opposition to the proposed allowance of the STD Working Group to manage February-June inflow in block flows, we recommend instead that the Board develop operating protocols for operators San Joaquin tributary storage rim dams and downstream dams to release a percent of February-June unimpaired flow on no more than a three-day running average, with a 7-day or 14-day true-up. The Board should consult with project operators and then develop these protocols, and operators should apply these protocols as a critical component of the flow objectives in all months where a percent of unimpaired objective is applied.</p>	<p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding the role and responsibility of the Stanislaus, Tuolumne, and Merced Working Group and the averaging period. Please see Master Response 2.2, Adaptive Implementation, for information about calculation of unimpaired flow, adaptive implementation, and operations plans, and the 7-day averaging period.</p>
1184	28	<p>The SED unreasonably excludes an alternative that would require flow contributions to the San Joaquin River upstream of its confluence with the Merced River. Chapter 3 of the SED describes the rationale for the Board's selection of the geographic extent in which it proposes to apply Lower San Joaquin River flow objectives. The rationale is worth quoting at length, because its logic is difficult to paraphrase:</p> <p>"The current flow objective applies only to the SJR at Vernalis. In developing the alternatives, the State Water Board considered whether alternative flow objectives would apply only to Vernalis, just as the current objective, or be extended upstream to some other location. Goals 1 and 2 of the plan amendments are as follows.</p> <p>"1. Maintain inflow conditions from the SJR Watershed sufficient to support and maintain the natural production of viable native fish populations migrating through the Delta.</p> <p>2. Provide flows that more closely mimic the natural hydrographic conditions (including frequency, timing, magnitude, and duration of natural flows) in the LSJR and three eastside, salmon-bearing tributaries--the Stanislaus, Tuolumne, and Merced Rivers--to which these migratory native fish species are adapted.</p> <p>"These goals support the selection of a flow alternative that includes the Stanislaus, Tuolumne, and Merced Rivers, not just Vernalis, because the expanded geographic area supports a variety of critical life history stages. For example, flows that support juvenile rearing in the tributary streams and migration through the Delta are needed to maintain the natural production of SJR fall-run Chinook salmon. Though these goals do not explicitly preclude consideration of alternative flow objectives upstream of the Merced River</p>	<p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the Upper San Joaquin River and the unimpaired flow contribution of different parts of the San Joaquin River Watershed. Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the reasonable range of feasible alternatives selected and evaluated in the SED and the exclusion of the Upper San Joaquin River and other parts of the watershed. Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding hydrologic modeling and a discussion of the calculation of unimpaired flow. Also see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, for more information regarding the separate process of developing the Delta Flow Criteria Report, and the consideration of beneficial uses and the public trust when establishing water quality objectives for the reasonable protection of different beneficial uses.</p>

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		<p>confluence, that area does not currently support viable native fish populations, and such alternatives would not reduce or avoid impacts.</p> <p>"For example, such an alternative would not reduce the quantity of water needed from the Stanislaus, Tuolumne, and Merced Rivers to achieve the goals. Inclusion of the flow alternatives for the SJR upstream of the Merced River confluence would increase the adverse environmental effects of the LSJR alternatives in a larger geographic area by reducing the quantity of water available for other uses in areas that rely upon water supplies in the SJR upstream of Merced River confluence. For this reason, alternatives that considered establishing flow objectives in geographic areas other than the LSJR Watershed and the Stanislaus, Tuolumne, and Merced Rivers, were eliminated from further consideration." [Footnote 52: SED, pp. 3-4 to 3-5.]</p> <p>Simply put, inclusion of a percentage of unimpaired flow, or some other flow requirement, from the San Joaquin River upstream of Merced River confluence, would add to the benefits in the San Joaquin River at Vernalis that will be achieved with the release of a percent of the February-June unimpaired flow from the three major tributaries to the Lower San Joaquin River. As Tim O'Laughlin of the San Joaquin Tributaries Authority pointed out in his presentation at the Board's December 19, 2016 hearing on the SED in Merced, the 2010 Delta Flow Criteria Report derived its conclusion that 60% of the San Joaquin River's February-June unimpaired flow was needed to protect fish and wildlife based on analysis that counted the unimpaired flow from the entire watershed, including the San Joaquin River upstream of Merced River confluence. [Footnote 53: See 2010 Delta Flow Criteria Report, pp. 119-122. See slides 26-28 of the SJTA presentation, available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/sfb_ssjde_bay_delta/12192016_sjta.pdf]</p> <p>Flows to support salmonids in the reach of the San Joaquin River between Friant Dam and Merced River confluence are specified in the San Joaquin River Restoration Settlement Agreement. However, that Settlement is silent on flows from Friant Dam as a contribution to the Water Quality Control Plan. The logic of the Board that flows upstream of Merced confluence are not needed because they will not benefit existing salmonids upstream of Merced confluence, even though salmonids will soon be present and even though such flows will immediately benefit salmonids and other fish and wildlife downstream of Merced confluence, is tortured.</p> <p>The Board issued a Draft Scientific Basis Report for Phase II of the update of the Water Quality Control Plan in October, 2016. It included analysis of each tributary of the Sacramento River and each "Eastside" tributary in its analysis, with the apparent intent of imposing flow requirements on each of them for purposes of the Water Quality Control Plan. This would leave the San Joaquin River upstream of Merced confluence as the lone exception from which the Board does not require a flow contribution in the Plan update.</p>	
1184	29	<p>The Lower San Joaquin flow alternatives proposed in the SED are unreasonably simplistic and do not support efficient allocation of water or informed balancing of beneficial uses. California in general, and the San Joaquin tributaries in particular, have an unsustainable agricultural business model. It is a boom and bust cycle built on overallocation of water. [Footnote 54: he requirement passed by the legislature in 2009 for urban water use, 20% reduction by the year 2020, put that sector of the state's water operations on track to a much better business model.] Too much delivery in good years creates crisis after 2-3 dry</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of unimpaired flow as it relates to the plan amendments and for the policy justification of the use of unimpaired flow. Please see Master Response 3.1, Fish Protection, for the scientific basis of the plan amendments and the expected benefits of the unimpaired flow requirement. Please see Master Response 1.1, General Comments, regarding the State Water Board's authority related to water rights, consideration of beneficial uses, and decision-making process. Please see Master Response 2.5, Baseline and No Project, regarding the representation of the baseline in the SED and by the Water Supply Effects model. Baseline</p>

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		<p>years. This system remains semi-functional only because it diverts water needed for rivers, over-pumps groundwater, or both.</p> <p>On the three major San Joaquin tributaries, average annual deliveries are about half of the average annual runoff (Figure 1 [see ATT1]). This level of deliveries is not sustainable and creates permanent stress on the system. The SED accepts this system by pushing the impacts of flow increases to dry and critically dry years. Because the SED accepts, without acknowledging, this baseline condition of overallocation, it presents impacts to water supply as being confined to Dry and Critically Dry years. [Footnote 55: Appendix K retains water year types from the previous Water Quality Control Plan and the SED uses them in some analysis, but Appendix K does not specify any particular use for water year types in the current plan.]</p>	<p>conditions are neither accepted nor rejected, as suggested by the comment, they are described to evaluate the change between actual conditions and a given alternative. Given baseline conditions reflect relatively high and consistent demand for supplies of surface water, it is expected that plan amendments would have potentially larger effect on surface water supply during dry and critically dry years.</p>
1184	30	<p>[ATT1: SED Figure 1. Annual median and average runoff, average agricultural deliveries and average M&I deliveries from the Merced, Tuolumne, and Stanislaus Rivers. Footnote 56: Source: SED: Merced: p. 2-16; Tuolumne: pp. 2-18 to 2-20; Stanislaus: pp. 2-27 to 2-33. Note: does not include riparian diversions.]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>
1184	31	<p>The SED’s analysis of impacts to water supply is consistent with the way the Board managed the drought in 2014-2016. Because the Board has historically allowed the over-diversion of water from the San Joaquin watershed, the Board found itself in a condition of extreme triage trying to manage water when there was no water to left manage. Over the course of the five hearings the Board held on the SED between November 29, 2016 and January 3, 2017, dry years and dry year sequences were the principal source of controversy regarding water supply impacts of the application of a February-June percent of unimpaired flow. Water user after water user argued that because of water supply impacts in dry years and dry year sequences, the entire construct of flow objectives requiring a February-June percent of unimpaired flow was unworkable and unreasonable.</p> <p>Setting up the problem in this way at once overstates and understates the water supply impacts of various alternatives for Lower San Joaquin River flow objectives. It overstates them because all impacts appear to come all at once, in dry year sequences. It understates them because it assumes continued diversion in many or most years of unsustainable levels of surface water, particularly for agriculture. To correct these deficiencies, the SED should have analyzed different rules for flow objectives, diversion allocations, and carryover storage [Footnote 57: The Merced system has limited storage and thus less flexibility for carryover than the Tuolumne and Stanislaus.] in different water year types. This would avoid the condition where the February-June percent of unimpaired flow requirement in wetter years is limited by the potential impacts of the application of the same percent in drier years. A graduated schedule would allow implementation of a greater percent of unimpaired flow in wetter years, providing increased instream benefits, and would retain much of the variability and other benefits of the percent of unimpaired construct in drier years, while managing the water balance by adjusting carryover storage and diversion allocations.</p> <p>In a water year like 2017, 60% of February-June unimpaired flow and reasonable carryover storage would be easily achievable. We would argue against full diversion allocations even in such a year, because it creates an expectation that it will be available in years when water is less bountiful. Instead, we would propose allocating to groundwater recharge the difference between current unsustainable levels of demand and somewhat reduced</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments, including adaptive implementation and emergency provisions.</p> <p>Please see Master Response 2.2, Adaptive Implementation, regarding how adaptive implementation can be used to maximize benefits and constraints governing how adaptive implementation can be used, including in dry years. The commenter’s suggestion to analyze different rules for flow objectives, diversion allocations, and carryover storage is encompassed by the proposed LSJR flow objectives through adaptive management. The SED analysis evaluates the range of 20 – 60 percent of unimpaired flow and baseline. Please see Master Response 2.1 Amendments to the Water Quality Control Plan, regarding the carryover storage requirements.</p> <p>Please see Master Response 3.1, Fish Protection, regarding unimpaired flow and functional flow. Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the reasonableness of modeling assumptions and use of best available information as it relates to modeling.</p>

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		<p>deliveries. [Footnote 58: This approach would be generally consistent with the urban 20% by 2020 model. See also discussion of groundwater impacts.] In less abundant Wet and Above Normal years, 60% and reasonable carryover storage are likely to require an increment of reduced diversion allocations to achieve a manageable water balance. For Below Normal water years, the SED should have also analyzed slightly reduced frequency of application of the percent of unimpaired flow, or perhaps a slightly reduced percentage. For Dry years, the SED should have analyzed further reductions in frequency of application of the percent of unimpaired flow and further reductions in diversion allocations, possibly with a change in carryover storage requirements.</p> <p>Finally, in Critically Dry years and dry year sequences, the SED should have evaluated a series of alternatives for diversion allocations, flow objectives and carryover storage, as a default that is achievable in the vast majority of cases without emergency modification by the Board. In Critically Dry water years and dry year sequences, the system becomes quickly stressed for all uses, even with significant reductions in diversion allocations, and application of the percent of unimpaired flow has a reduced aquatic benefit. This is the specifically limited situation in which the "functional flows" advocated almost universally by water users actually has some justification and utility. To be clear, this is appropriate for Critically Dry years and droughts: the universal substitution of "functional flows" for the percent-of-unimpaired construct, as advocated by water users, would continue the existing degraded condition in which there are effectively two types of water years in the San Joaquin River system: flood years and Critically Dry years.</p> <p>The SED should also have analyzed the options generally described above for their relative benefits to fish and other instream resources. Generally, reducing the percent of unimpaired flow, thus averaging the benefits across the entire five-month February-June period, is likely to be less beneficial than reducing the number of months in which the percent of unimpaired is applied.</p>	
1184	32	<p>Board staff, at the December 5 technical workshop, argued that it did not "optimize" alternatives in the SED. Staff claimed that the SED likely overestimated rather than underestimated the water supply effects. This apparently is supposed to make the document compliant with CEQA. As we have discussed, this is a claim that does not answer basic shortcomings of the document: an agency cannot salvage a CEQA document's lack of clarity and completeness by vaguely overshooting its estimation of impacts. The document does not describe how operators could or would operate to comply with objectives. It does not evaluate the interplay and tradeoffs between the critical elements of water supply availability: flows, diversion allocations, carryover storage, water temperature, and other water quality objectives such as dissolved oxygen and salinity. It does not consider water year types. The Board cannot base findings and decisions on approximation.</p>	<p>The SED adequately evaluates and discloses the potentially significant environmental impacts associated with the alternatives in Chapters 5 through 17 of the SED. The fact that the Board erred on the side of being conservative with water supply impacts so as to not understate impacts does not render the analysis invalid. The SED provides a summary and a side by side comparison of the environmental impacts in Chapter 18, Summary of Impacts and Comparison of Alternatives. The SED considers economics and the costs associated with different resources under the different alternatives in Chapter 20 and provides a summary and a side by side comparison of the economic considerations in Tables 20.1-2 and 20.1-3. The content of the SED assists decision makers in understanding the potentially significant environmental impacts and the economic considerations.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of the plan amendments (i.e., project description) and a discussion of implementation. Please see Master Response 3.2, Surface Water Analyses and Modeling, for information regarding water supply and diversion allocations, as well as information regarding carryover storage. Please see Master Response 3.1, Fish Protection, for information regarding water temperature. Please see Master Response 3.3, Southern Delta Water Quality, for information regarding salinity.</p> <p>Dissolved oxygen is considered in Chapter 5, Surface Hydrology and Water Quality, under the discussion for impact WQ-3 (substantially degrade water quality by increasing pollutant concentrations caused by reduced river flows.) Based on the requirements of the program of implementation, implementation of the plan amendments is not expected to cause river flow or reservoir storage to decrease to levels that would cause</p>

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			<p>low dissolved oxygen.</p> <p>Please see Master Response 2.4, Presentation of Data and Results in the SED and Response to Comments for information regarding water year types. The SED does consider water year types. As described in Chapter 5, Surface Hydrology and Water Quality, Section 5.2.2, Upper San Joaquin River Unimpaired and Historical Flow, the various evaluations in the SED present results in either a cumulative distribution or percentile (percent cumulative distribution). This allows an evaluation of different variables across all water year types (e.g., driest of the dry to wettest of the wet).</p>
1184	33	<p>The SED chooses objectives for Lower San Joaquin River flow that will not be protective of fish and wildlife. Page 1 of the Executive Summary of the SED states: "The Bay-Delta is in ecological crisis. Fish species have not shown signs of recovery since adoption of the 1995 Bay-Delta Plan objectives intended to protect fish and wildlife." [Footnote 59: SED, p. ES-1.] The 2010 Delta Flow Criteria Report developed new flow criteria for the Delta ecosystem necessary to protect public trust resources. These criteria were intended to halt population decline and increase populations of certain species and represented the best available fishery and hydrologic science to be had in 2010. Nearly all of the scientists who participated in development of the report agreed that mimicking the natural hydrograph is necessary to improve conditions for native fish species and to counter invasive species in the Delta.</p> <p>As required by the State Legislature, the Board's report included the volume, quality and timing of water necessary for the health of the Delta ecosystem. [Footnote 60: Water Code § 85086(c).] The report identified the following criteria for Delta health:</p> <ol style="list-style-type: none"> 1. 75 percent of unimpaired Delta outflow from January through June; 2. 75 percent of unimpaired Sacramento River inflow from November through June to protect numerous runs of migratory salmon that use the Sacramento River Basin; 3. 60 percent of unimpaired San Joaquin River inflow from February through June to protect juvenile Chinook salmon during their peak emigration period; 4. Increased fall Delta outflow in wet and above normal years; 5. Fall pulse flows on the Sacramento and San Joaquin Rivers to stimulate migrating fish; 6. Flow criteria in the Delta interior to help protect fish from mortality in the central and southern Delta caused by operations of the state and federal water export pumps; 7. 60 percent of 14-day average of February-June unimpaired flow at Vernalis; 8. 10-day minimum pulse flow of 3,600 cubic feet per second in late October (e.g., October 15 to 26) at Vernalis; 9. Application of the 2006 Bay-Delta Plan's October flows at Vernalis. [Footnote 61: 2010 Delta Flow Criteria Report, pp. 114-123.] <p>The report determined that following these criteria would protect public trust resources on the San Joaquin River and throughout the Delta. The basis for these determinations rested on the Board's findings that these criteria would (1) increase juvenile Chinook salmon outmigration survival and abundance, and provide conditions that would improve</p>	<p>Please see Master Response 1.2, Water Quality Control Process, for the relationship between the plan amendments and the 2010 Delta Flow Criteria Report.</p> <p>In a separate process, the State Water Board is reviewing and considering updates to other elements of the Bay-Delta Plan including, but not limited to, Delta outflows, Sacramento inflows, and interior Delta flows. Please see the State Water Board website at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/comp_review.shtml for more information.</p> <p>In Appendix K, Revised Water Quality Control Plan, the State Water Board commits to reevaluating the assignment of responsibility for meeting the October pulse flow objective during a water right, FERC licensing, or other proceeding. Furthermore, monitoring and special studies will be required to determine the need for any changes to the October pulse flow and its implementation.</p> <p>The State Water Board provided in the document the scientific justification that increased and more naturally, variable flows are needed to protect fish and wildlife beneficial uses. Furthermore, in order to achieve a more natural flow pattern, a percentage of unimpaired flow from each of the salmon-bearing tributaries should be provided in the February through June time frame. The scientific evidence for these assertions is described in Appendix C and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30. Master Response 3.1, Fish Protection, provide further clarification.</p> <p>In Chapter 7, Aquatic Biological Resources, fish species (including salmonids) are selected for evaluation because they are either native species whose populations in California are declining and/or have received a special-status designation by federal or state resource agencies. Furthermore, these species are considered sensitive to environmental changes that are expected to result from implementation of the plan amendments.</p>

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		<p>population growth achieve a doubling of the current salmon population (salmon doubling requirements contained in Section 3406 et seq. of the CVPIA and Section 6900 of the California Fish and Wildlife Code) in more than half of all years; (2) provide flows for adult Chinook salmon that would decrease straying, increase dissolved oxygen concentrations in the San Joaquin River mainstem through the Stockton Deep Water Ship Channel, reduce water temperatures, and improve olfactory homing fidelity; and (3) provide adult Chinook salmon attraction flows. [Footnote 62: 2010 Delta Flow Criteria Report, p. 133, Table 22.]</p> <p>The report indicated that salmon are the most sensitive species for which it developed public trust-protective flow criteria, as all three of its San Joaquin River inflow criteria directly relate to the sensitivities of salmon populations to changes in and timing of flow through the Bay-Delta Estuary. But despite the 2010 report's extensive background and recent flow recommendations to protect fish and wildlife, the SED largely dismisses the 2010 report and proposes flow objectives for the lower San Joaquin River that are not protective of fish and wildlife.</p>	
1184	34	<p>The 2010 Delta Flow Criteria Report states that altering the flows in the lower San Joaquin River to create a more natural flow regime would improve a number of ecosystem attributes such as (but not limited to): 1) native fish communities; 2) food web; 3) habitat; 4) geomorphic processes; 5) temperature; and 6) water quality. [Footnote 63: Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, p. 3-41.] Major researchers involved in developing ecologically protective flow prescriptions concur that mimicking the unimpaired hydrographic conditions of a river is essential to protecting populations of native aquatic species and promoting natural ecological functions [Footnote 64: Id.]</p> <p>The San Joaquin River Basin's hydrology has been dramatically altered by water development over the period 1984-2009. In comparing unimpaired with observed (measured) flow conditions for the Basin's rivers, it is clear that flow conditions have been greatly reduced on the major tributaries by water project operations. Operations during this time period reduced median annual water flow volumes at Vernalis by 53% compared to unimpaired flow, and have reduced median spring flows at Vernalis in April, May and June by 74%, 83%, and 81% respectively. [Footnote 65: Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, p. 3-2.] Estimates of flows needed to double salmon production range from 51% to 97% of unimpaired flow, with a greater percentage of unimpaired flow needed in drier years than wet years. [Footnote 66: Id., p. 3-51.]</p>	<p>We appreciate the comment regarding the extent to which flows have been reduced by water development. The plan amendments therefore seek to protect fish and wildlife beneficial uses that have adversely been affected by reduced flows.</p> <p>Unimpaired flow is not the same as natural flow; however, it is nevertheless reflective of the frequency, timing, magnitude, and duration of the natural flows to which fish and wildlife have adapted and have become dependent upon. A flow objective based on unimpaired flows is intended to restore a specific percent of flows for the reasonable protection of the fish and wildlife beneficial use while considering other beneficial uses.</p> <p>Please see Master Response 3.1, Fish Protection, for information regarding the fish benefits of the LSJR plan amendments.</p>
1184	35	<p>The SED fails to provide a reasoned analysis to justify the reduction in flow for the San Joaquin River at Vernalis from the 60% of February-June unimpaired flow it found in 2010 was necessary to protect public trust resources to the 30% to 50% range of flow, beginning at 40%, that Appendix K, Table 3 recommends.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the justification for the LSJR plan amendments.</p>
1184	36	<p>The SED makes no showing in Chapter 19 or elsewhere that the recommended Lower San Joaquin River flow objectives can attain the outcomes alleged for them. The water temperature modeling in Chapter 19 of the SED is predicated on the water balance modeling whose flaw we have described above. The floodplain inundation analysis in Chapter 19 shows little benefit, and does not specify a duration of inundation in its tables; duration is a fundamental component of the biological benefit. [Footnote 67: Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern</p>	<p>The State Water Board has strived to use the best available science throughout the scientific basis and benefits analyses and, in accordance with CEQA, used its best efforts to find out and disclose what it reasonably can. Overwhelming scientific evidence indicates that more flow of a more natural flow regime is needed to improve the riverine ecosystems in the Stanislaus, Tuolumne, Merced, and San Joaquin Rivers. Please see Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, and Master Response 3.1, Fish Protection, regarding</p>

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		<p>Delta Salinity Objectives, pp. 19-63 to 19-65.] The SalSim modeling is universally dismissed and disregarded as flawed, and the both the Board in several hearings and the Department of Fish and Wildlife [Footnote 68: Oral testimony of Dean Marston, DFW, at the January 3, 2017 Board hearing on the SED.] have disavowed it.</p>	<p>attaining outcomes.</p> <p>Also see Master Response 3.2, Surface Water Analyses and Modeling, regarding the Water Supply Effects Model.</p> <p>See Master Response 3.1 regarding floodplain inundation. Additionally, Chapter 19 indicates that monthly average flows will be higher more often in the range that is meaningful for floodplain inundation. Therefore, Chapter 19 shows results for potential of approximately 30 day duration events (depending on the month). The adaptive implementation process (Master Response 2.2, Adaptive Implementation) will allow the fine tuning of flows to achieve desired floodplain timing, magnitude, and duration.</p> <p>See Master Response 3.1 regarding the use of SalSim.</p>
1184	37	<p>The 2012 version of the SED recommended a minimum year-round Vernalis flow of 2000 cfs, based on the need to maintain dissolved oxygen at the Port of Stockton. The present SED proposes, without explanation, 1000 cfs, which the STM Working Group can recommend that the Board's Executive Director increase or decrease by 200 cfs.</p>	<p>The revised water quality objective to reasonably protect fish and wildlife beneficial uses on the Lower San Joaquin River proposes maintaining a percent of unimpaired flow on the Stanislaus, Tuolumne, and Merced Rivers of between 30 percent and 50 percent, inclusive, from February through June. The minimum base flow is an additional protection, February through June, in case, for example in a critically dry year, unimpaired flows of between 30 and 50 percent dropped to below 800-1,200 cfs. The 2010 version of the SED did not recommend a minimum year-round Vernalis flow of 2000 cfs. The up to 2,000 cfs at Vernalis in October is an existing requirement that remains unchanged from the 2006 Water Quality Control Plan. That existing requirement is for a 1,000 cfs base flow in October that can be augmented with up to 28,000 acre-feet of pulse flows to achieve a monthly average flow of 2,000 cfs.</p>
1184	38	<p>Although the Board qualified its 2010 flow criteria for the San Joaquin River by stating that "these flow criteria do not consider any balancing of public trust resource protection with public interest needs for water," the SED makes no statement or explanation of the method Board staff employed or that it recommends that the Board employ to balance the public trust resources.</p> <p>The SED fails to adequately provide the methodology and the analysis to support the Board's affirmative duty to protect the public trust. Governments have a permanent fiduciary responsibility and obligation to protect the public trust, which is defined as the people's common heritage of streams, lakes, marshlands and tidelands and which can only be surrendered in rare instances when abandonment of that right is consistent with the purposes of the trust. The public trust is essentially a property right in healthy and vibrant waterways belonging to all Californians. Moreover, the Delta and its tributary rivers are national treasures belonging to all citizens of the United States.</p> <p>Pursuant to legislative direction, the State Board conducted an intensive year-long proceeding in 2010 to determine flows in the Delta and its two major tributary rivers necessary to protect public trust resources. The resulting 2010 Delta Flow Criteria Report found that "Delta flows are insufficient to support native Delta fishes" and that "60% of unimpaired San Joaquin River inflow from February through June" was necessary to protect public trust resources. The Board made clear that the balancing public trust resources with consumptive water uses would occur at a later date. Also, pursuant to legislative direction, the California Department of Fish and Wildlife conducted an extensive proceeding that resulted in the 2010 DFW Flow Report, which echoed the conclusions of the State Board.</p> <p>Members and staff of the State Board have clearly stated that the SED and State Board Phase I proceeding will incorporate the necessary public trust balancing between competing uses of water. Unfortunately, the SED's recommended balancing is grossly deficient, and the</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process regarding the Delta Flow Criteria Report as well as the State Water Board's authorities and regulations, the consideration of beneficial uses and public trust doctrine.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the justification for the plan amendments. Please see Master Response 3.1, Fish Protection, regarding the fish benefits of the LSJR flow objectives.</p>

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		<p>SED as a whole is insufficient to support balancing by the Board. The SED fails to describe or discuss the rationale and methodology employed in balancing.</p>	
1184	39	<p>While the SED quantitatively analyzes economic costs to agricultural and selected M&I water users, it either ignores or analyzes the economic benefits of healthy waterways--including ecosystem services, commercial and sport fisheries, recreation and public health as well as the contingent value of a healthy river/estuary--with only a general qualitative assessment. The failure to quantitatively analyze and describe both sides of the benefit/cost ledger renders the economic analysis insufficient as a balancing document.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process regarding the consideration of beneficial uses. Please see Chapter 20, Economic Analyses, Section 20.1, Introduction and Master Response 8.0, Economic Analyses Framework and Assessment Tools, for a description of how economics is considered in the Recirculated SED and the tools used. As described in Chapter 20, "The purposes of and the analytical framework for these analyses are (1) to compare potential changes in surface water diversion-related economic effects of the LSJR alternatives, and (2) to describe the potential costs of compliance with updated water quality objectives for the southern Delta. Although the analyses conducted to address these two purposes are presented together in this chapter, this should not be interpreted as an attempt to compare relevant costs and benefits of the LSJR alternatives or of the SDWQ alternatives." Please see chapter 20, Section 20.3.5, Effects on Fisheries and Associated Regional Economics and Section 20.3.6, Effects on Recreational Opportunities, Activity, and the Regional Economy, for quantification and evaluation of the commercial and recreational benefits associated with the plan amendments. Finally, please see Master Response 8.4, Non-Agricultural Economic Considerations, for a discussion regarding ecosystem benefits.</p>
1184	40	<p>Having expended considerable effort and resources in quantitatively analyzing the costs of providing increased flows, the SED essentially limits its assessment of the benefits side of the ledger to the "potential use and non-use benefits associated with supporting and maintaining sustainable population of Chinook salmon in the three eastside tributaries." [Footnote 69: SED, Chapter 20, P. 20-70.] The SED overlooks fish species other than salmon, including Delta fisheries. The SED simply summarizes benefits to commercial and sport harvest and non-use values associated with salmon restoration for each of the Lower San Joaquin River flow alternatives by saying: "Effects cannot be reliably quantified but would be expected to be beneficial and substantial. . ." [Footnote 70: SED Chapter 20, Table 20.2-4, p. 20-8.]</p>	<p>The purpose of the environmental review process is to disclose potential environmental impacts on the public and decision-makers. The document gives consideration to potential economic effects in Chapter 20, Economic Analysis and describes the scope of the economic evaluation in Master Response 8.0, Economic Analyses Framework and Assessment Tools, per the requirements of Water Code Section 13141 and Section 13241. Please see Master Response 1.2, Water Quality Control Planning Process, regarding consideration of beneficial uses by the State Water Board. Please see Master Response 1.1, General Comments, regarding general responses to economic-related comments, including those attempting to compare costs and benefits and please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding ecosystem services and potential benefits associated with ecosystem services.</p> <p>See Master Response 3.1, Fish Protection regarding the use of surrogate fish species to evaluate effects to other fish species.</p>
1184	41	<p>The SED summarizes the conclusions of four salmon restoration studies on other rivers of non-use values: Upper San Joaquin, Columbia, Elwha and Klamath Rivers. [Footnote 71: SED Chapter 20, Table 20.3.5-3, p. 20-71.] However, the SED notes that an equivalent effort on the project-area waterways would require designing and conducting specific surveys and studies. [Footnote 72: Id., p. 20-70.] Again, with respect to recreation activity-related economics, the SED notes that it does not quantify effects on in-river values but expects them to be generally unchanged or slightly greater. [Footnote 73: Id., Table 20.2-5, p. 20-9.] In other words, the authors of the SED were willing to expend effort and resources in quantifying the costs of restoration to water users but not willing to make a similar effort to quantify the benefits of protecting and restoring public trust resources.</p> <p>Public trust values cover far more than salmon restoration. They include ecosystem services, which encompass such things as clean water and the decomposition, detoxification or dilution of wastes; public health benefits; cultural values such as spiritual and recreational benefits (beyond fishing); avoided treatment or infrastructure replacement costs; hedonic pricing such as improved property values along healthy waterways; and improved biodiversity within watersheds. Public trust values also include the contingent valuation of healthy ecosystems, which are not limited to fishing or salmon restoration. The public trust balancing at Mono Lake found that the value of restoring the lake was between 56 and 132</p>	<p>Please see Master Response 8.4. Non-Agricultural Economic Considerations regarding the economic contribution of the plan amendments to fish and wildlife and other beneficial uses.</p>

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		times the value of the water lost to Los Angeles.	
1184	42	<p>The SED fails to acknowledge, discuss or use the numerous state and federal guidelines and guidebooks on economic analyses that are routinely used by the U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, USEPA and the Department of Water Resources (DWR) in evaluating benefits and costs pertaining to public trust resources. For example, federal agencies routinely use The Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies ("P&G") that was recently updated. USEPA uses the Guidelines for Preparing Economic Analyses and report Valuing the Protection of Ecological Systems and Services.</p> <p>Economic analyses conducted by DWR must conform to the federal P&G; in addition, DWR has developed its own Economics Analysis Guidebook, as well as a series of guidelines, including Ecosystem Valuation Methods, Natural Floodplain Functions and Societal Values, Middle Creek Flood Ecosystem Restoration Project Case Study: Benefit and Cost Analysis and Floodplain Management Benefit and Cost Analysis Framework. There are also numerous peer-reviewed scientific papers discussing how to properly conduct a benefit/cost analysis that addresses differences in net economic values: economic benefits minus economic costs across a range of alternatives, including the economic significance of natural resources and associated ecosystem services.</p> <p>As an attachment to our March 29, 2013 comment letter on the 2012 SED, we submitted a comprehensive report on the previous draft of the SED on balancing the public trust prepared by ECONorthwest and titled, Bay-Delta Water, Economics of Choice. [Footnote 74: See CSPA et al March 29, 2013 comments on the 2012 SED, Appendix C.] ECONorthwest is a recognized national expert in the economic value of public trust resources. The report is virtually a how-to guide in valuing public trust resources and addresses the relevant scope of public trust balancing, including economic analyses, risk and uncertainty, ecological services, best practices, allocation of scarce resources among competing demands and environmental justice concerns. It is apparent that the authors of the SED either didn't read or failed to consider the recommendations in that report.</p>	<p>Please see response to comment 1180-40. Please see Chapter 20, Economic Analyses, Section 20.1, Introduction, and Master Response 8.0, Economic Analyses Framework and Assessment Tools, for a description of how economics are considered in the SED and the tools used. As described in Chapter 20, "The purposes of and the analytical framework for these analyses are (1) to compare potential changes in surface water diversion-related economic effects of the LSJR alternatives, and (2) to describe the potential costs of compliance with updated water quality objectives for the southern Delta. Although the analyses conducted to address these two purposes are presented together in this chapter, this should not be interpreted as an attempt to compare relevant costs and benefits of the LSJR alternatives or of the SDWQ alternatives." The State Water Board is not required to conduct a cost-benefit analysis and the analysis in the SED is not a cost-benefit analysis. Please see Chapter 20, Section 20.3.5, Effects on Fisheries and Associated Regional Economies and Section 20.3.6, Effects on Recreational Opportunities, Activity, and the Regional Economy, for quantification and evaluation of the commercial and recreational benefits associated with the plan amendments. Finally, please see Master Response 8.4, Non-Agricultural Economic Considerations, for a discussion regarding ecosystem services and potential benefits. The guidelines cited by the commenter are designed for specific projects and circumstances that different from the regulatory action proposed by the State Water Board. For example, the Principles and Guidelines ("P&G") and DWR guidebook are approaches associated with proposed voluntary actions or projects related to water development or infrastructure projects, and are designed to ensure that federal (or state) funds are used in an economic and fiscally responsible manner.</p>
1184	43	<p>Balancing the public trust is, at best, extremely difficult in a vastly overappropriated watershed where excessive water diversions have degraded and substantially diminished public trust assets. In California, water belongs to the people, and the right to use water is usufructuary and not possessory. Put in the context of rights to water, a user of water must respect the rights and interests of others, including the peoples' property right to robust fisheries, clean water and healthy ecosystems. The SED fails to acknowledge or quantitatively analyze the full range of public trust resources in the project area and, consequently fails to conduct a defensible balancing of public trust benefits and resources and the existing consumptive uses of water. This violates both CEQA's requirements for analysis and fair disclosure and the State Board's legal responsibility to adequately and fairly balance the public trust.</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process regarding the consideration of beneficial uses and the public trust doctrine as well as the State Water Board's authorities and regulations.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the justification for the plan amendments. Please see Master Response 3.1, Fish Protection, regarding the fish benefits of the LSJR flow objectives.</p>
1184	44	<p>The SED and Appendix K improperly rely on adaptive management. Appendix K of the SED establishes a Program of Implementation that will effectuate the project's "Adaptive Implementation," which is simply another phrase for adaptive management. [Footnote 75: See Appendix K, pp. 29-34.] Adaptive management has become increasingly popular among decision makers in recent decades because it enables decision makers to delay or avoid making difficult and politically sensitive decisions. The SED uses the concept of "adaptive</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding the scientific and policy justification of the plan amendments, adaptive implementation, and adaptive management.</p> <p>The effects of adaptive implementation were analyzed in the SED by analyzing a broad range of flows—20 to 60 percent of unimpaired flow and baseline flows and what would occur under the adaptive adjustments to</p>

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		<p>implementation" to avoid defining the project and to avoid evaluating the impacts of the combined effects of Lower San Joaquin River flow objectives, changes in diversion allocations, and prospective carryover storage requirements.</p> <p>The State Board's 2010 Delta Flow Criteria Report found that 60% February through June unimpaired flow is minimally necessary to protect public trust resources. The Department of Fish and Wildlife's 2010 Quantifiable Biological Objectives and Flow Report echoed this conclusion. [Footnote 76: DFW 2010 Report, op cit.] Yet the SED makes no defensible technical or legal justification for its preferred requirement--40% of February-June unimpaired flow, with an adaptive range of 30% to 50%--as adequate for the protection of public trust resources. Instead, the SED relies on adaptive management to provide the justification at an unspecified time in the future.</p> <p>Adaptive management has a long and checkered history. The National Research Council reviewed the Bay Delta Conservation Plan (BDCP) and prepared a report titled, "A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan." It observed:</p> <p>"Despite numerous attempts to develop and implement adaptive environmental management strategies, many of them have not been successful (Gregory et al., 2006; Walters, 2007). Walters (2007) concluded that most of more than 100 adaptive management efforts worldwide have failed primarily because of institutional problems that include lack of resources necessary for expanded monitoring; unwillingness of decision makers to admit and embrace uncertainties in making policy choices; and lack of leadership in implementation. Thus many issues affecting the successful implementation of adaptive management programs are attributable to the context of how they are applied and not necessarily to the approach itself (Gregory et al., 2006). In addition, the aims of adaptive management often conflict with institutional and political preferences for known and predictable outcomes (e.g., Richardson, 2010) and the uncertain and variable nature of natural systems (e.g. Pine et al., 2009). The high cost of adaptive management, and the large number of factors involved also often hinder its application and success (Lee, 1999; NRC, 2003)." [Footnote 77: National Research Council, A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan, 2011, p. 6. Available at: https://www.nap.edu/download/13148]</p> <p>Adaptive management in large, highly complex ecosystems is extremely difficult, time-consuming and expensive. In highly stressed and overappropriated watersheds where high-value resources, funding constraints and sharp political conflict over management choices are involved, the difficulty increases substantially. A high degree of risk and uncertainty increases the difficulty exponentially. The quarter-century track record of adaptive management in the Delta--from CalFed to Vernalis Adaptive Management Plan, Interagency Ecological Program, state and federal biological opinions and associated technical work groups, and myriad State Board proceedings --has been one of utter failure. Managers and decision makers have routinely rejected the "adaptive" recommendations made by scientists and technical support teams. Resource and regulatory agencies have failed to adopt and implement recommended criteria and have failed to enforce existing criteria. Financial resources have been lacking. Meanwhile, Delta fisheries have collapsed. As adaptive management programs have been stacked on top of each other, native fisheries and lower trophic orders have declined by one to two orders of magnitude and now face extirpation.</p>	<p>the flow requirements.</p> <p>The flow objective is not proposing unbounded adaptive implementation or management. A specific flow range is being adopted-- 30 to 50 percent of unimpaired flow, with a starting point of 40 percent; the rules for operating within this range are clearly defined in the program of implementation (SED Appendix K), and explained in the Executive Summary. Additional information, and examples of how adaptive implementation can work, including a discussion of STM governance, are provided in Master response 2.2, Adaptive Implementation.</p> <p>In the absence of any use, or limited use, of adaptive implementation, the flow requirement is clearly defined as 40 percent of February through June unimpaired flows, on a minimum 7-day running average. In the absence of consensus of the STM Working Group and for adaptive adjustments greater than a year, the State Water Board is required to act on any adaptive adjustments, which will occur in publicly noticed meetings.</p> <p>Master Response 2.2, Adaptive Implementation, provides additional description and examples of how adaptive management may proceed, and the bounds under which it may do so. Master Response 2.2 also clarifies the difference between the implementation framework in the program of implementation, and the as yet, undeveloped adaptive management which must be done according to the constraints of the adaptive implementation framework.</p>

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		<p>Taken together, the vast suite of water quality control plans and water rights decisions by the SWRCB over the last decades essentially constitutes an adaptive management process. CalFed was an elaborately structured water planning and adaptive management program. The CalFed Record of Decision mentions adaptive management 132 times. The array of Biological Opinions of USFWS and NMFS and the CESA permits of CDFW over the past two decades comprise a broad adaptive management scheme. Indeed, the Reasonable and Prudent Alternatives (RPAs) of the Biological Opinions are implemented through adaptive management: the Water Operations Management Team, Smelt Working Group, Delta Operations for Salmonids and Sturgeon Work Group, Sacramento River Temperature Task Group and other groups. Unfortunately, senior managers and decision makers have routinely ignored and rejected the explicit recommendations of the scientists, biologists and technical review teams.</p> <p>The Recovery Plan for Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon and Central Valley steelhead is based upon adaptive management, as is the Final Restoration Plan for the Anadromous Fish Restoration Program. The Vernalis Adaptive Management Program was a poignant example of adaptive management failure in which water agencies failed to provide necessary flow to complete the program. The Interagency Ecological Program and its fifteen Project Work Teams is an adaptive management program, as is the Collaborative Science and Adaptive Management Program. A broad adaptive management program was an essential component in the Blue Ribbon Task Force’s Delta Vision Report: it was mentioned forty-one times in the Delta Vision Strategic Plan. From its inception, the BDCP envisioned an extensive adaptive management program. Ten years later, after BDCP morphed into California WaterFix, it still has no final defined and recommended detailed adaptive management program that has been approved by participating agencies and no agreement to extensively fund such a program.</p> <p>Appendix K’s failure to identify the specific components and measures of the adaptive management process deprives the public of necessary information on which to base an opinion of the sufficiency or likely success of implementation. This violates the most basic public disclosure, analytical and mitigation requirements of CEQA. Appendix K lacks measurable performance measures, milestones and funding mechanisms to guide and ensure the success of the proposed adaptive management program. It does not discuss and analyze risk and uncertainty. It pushes development of goals and objectives into the future, and abdicates the Board’s responsibility to develop them to the adaptive management group itself. By contrast, the USEPA established a performance measure in its 1995 Bay-Delta Plan based on the ratio of tagged out-migrating salmon that reached Chipps Island.</p> <p>Appendix K provides no guidance for governance within the STM Working Group and does not define how that group or the Board will evaluate and enforce goals and quantitative objectives. Participation in the STM Working Group is limited to staff from the Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the Board, plus representatives of water users on the affected rivers and other representatives deemed appropriate by the Executive Director. Without public scrutiny, accountability or subsequent environmental analysis, and with no defined or required formal public process before the Board, the STM Working Group and the Board’s Executive Director will be able to reduce flows and manage reservoir storage operations at levels that are likely to result in significant, redirected and unavoidable impacts that the SED neither discloses nor analyzes. This back room operation will deprive other users of water of oversight just as it will deprive</p>	

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		individuals and organizations whose mission is to advocate for the public interest.	
1184	45	<p>The analysis of the proposed relaxation of south Delta salinity standards violates CEQA's requirement for analysis and fair disclosure. The southern Delta is identified as impaired because of electrical conductivity on the California Integrated Report (Clean Water Act § 303(d) List/305(b) Report). The SED proposes to increase the existing 0.7 dS/m April-August salinity limit in the southern Delta by 43% based upon a flawed assessment of potential impacts to agriculture. It ignores the potential impacts that increasing salinity would have on aquatic life and aquatic and riparian vegetation.</p> <p>The SED's assessment of potential salinity impacts to agriculture is solely based on a seven-year old report prepared by Dr. Glenn Hoffman titled Salt Tolerances of Crops in the Southern Sacramento-San Joaquin Delta. [Footnote 78: SED Appendix E.] Dr. Hoffman used 30-year old laboratory data on the salt tolerance of bean varieties that are no longer relevant and that ignored effects on different stages of crop life. He also improperly employed data from subsurface drains in developing leaching fractions, and rejected more conservative modeling results. He candidly observed, "With such an important decision as the water quality standard to protect all crops in the South Delta, it is unfortunate that a definitive answer cannot be based on a field trial with modern bean varieties." [Footnote 79: Id., p. 98.] And he recommended that field studies be conducted to determine: a) the salt tolerance of beans for local conditions and for new varieties grown today that may have different tolerances; b) the salt tolerance of beans at different growth stages; and c) actual leaching fractions.</p> <p>Only one of the five peer-reviewers of the State Board's Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives (Appendix C) felt confident enough to comment on the Hoffman Report. The selection of only one reviewer with sufficient expertise to review Dr. Hoffman's report fails to meet the legal requirements of Health & Safety Code § 57004 regarding peer review applicable to State Board technical reports. However, the single peer review by Dr. Grismer, while agreeing with Dr. Hoffman's conclusions based upon reported leaching fractions, noted that additional studies were needed, in part because the data was old and based on greenhouse studies on bean varieties unlikely to be used commercially today.</p> <p>Subsequent to the Hoffman Report, the South Delta Water Agency arranged for a series of studies and field tests to better determine actual leaching fractions in the South Delta. [Footnote 80: We incorporate by reference the comments on salinity of South Delta Water Agency, including the presentation at the December 16, 2016 hearing in Stockton by Dr. Michelle Leinfelder-Miles entitled Leaching Fractions Achieved in South Delta Soils under Alfalfa Culture which is available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/workshop_presentations/12162016_leinfelder-miles.pdf]</p> <p>The results, reported by Michelle Leinfelder-Miles of the University of California Cooperative Extension, demonstrate that actual leaching fractions in the South Delta are significantly below the levels assumed by the Hoffman Report. Where the Hoffman Report assumed leaching fractions of 15-20% or higher, the new field studies reveal that actual leaching fractions in many areas are 5% or lower. Where the Hoffman Report assumed applied water salinity was .7 dS/m, actual applied water ranged from 1.0-2.0 dS/m in many locations.</p>	<p>Please see Appendix E, Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta, and Master Response 3.3, Southern Delta Water Quality, regarding the justification for amending the salinity objective. Appendix E used the current state of knowledge on crop salt tolerance along with available input information, such as leaching fraction, crops, and water quality, from the Delta. Please see Chapter 11, Agricultural Resources, Section 11.4.2, Methods and Approach, and Impacts AG-1 through AG-4 for the analysis of potential impacts of salinity on crops in the southern Delta. Please see Master Response 3.3 for more information on leaching fractions.</p> <p>The information presented by the commenter on the recent leaching study by Dr. Leinfelder-Miles does not consider all of the author's findings and rather selects findings that support the comment (further discussed in Master Response 3.3). Specifically, Dr. Leinfelder-Miles' report indicates the yield in areas with low leaching fraction were higher than some areas with higher leaching fractions. Also Dr. Leinfelder-Miles found that irrigating with high quality water (i.e., seasonal average low EC of 0.47 dS/m) in a soil with a low leaching fraction resulted in an alfalfa yield (8.1 tons/acre). This is in contrast to the study field with the lowest water quality (1.78 dS/m seasonal average) that had the highest leaching fraction (25 percent) and yield of 9.8 tons/acre. Field 2 of the study in 2013 had the highest soil salinity (ECe), a 3 percent leaching fraction and the highest yield. The one factor that this field excelled in was a 150 cm rooting, which was deeper than the rooting depth in all other fields. This extra depth (10–50 cm) allows for better drainage. In addition, the author stated that field 1, which had the shallowest rooting depth, appeared to have a high water table that appeared to impede leaching. Reducing the level of the water table is a common practice with infrastructure such as tile drains. These data points and information indicate that leaching is crucial to obtaining superior yields. Finally, as shown in the study, water quality is not the reason for the reduced yields or lower leaching fraction, rather it is the soil profile's ability to drain.</p> <p>The State Water Board has considered this study in the response to comments prepared for the final SED.</p>

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		<p>The new information establishes that, in areas with low leaching fractions, salt is accumulating in the root zone at levels that can reduce crop yield. Inexplicably, the SED ignores the new field data provided by South Delta Water Agency. The Board should not establish new salinity standards and should certainly not relax them until the completion of necessary studies incorporating the new information and analysis of these studies in a revised SED. The SED fails to incorporate and analyze all relevant field data on leaching fractions and salinity uptake by crops in the South Delta. Failure to utilize new and relevant field data to evaluate the impacts of salinity to agricultural crops would violate CEQA's requirements for analysis and fair disclosure.</p>	
1184	46	<p>There are a number of fish species in the south Delta and San Joaquin River that are potentially adversely affected by salinity: for example, striped bass and splittail. It's not that there is an inadequate analysis of salinity impacts to fisheries: there is simply no analysis! The SED must analyze the salinity impacts of project alternatives to beneficial uses applicable to aquatic species in the Delta and San Joaquin River.</p> <p>The SED ignores the 1995 federally promulgated salinity standards for striped bass and splittail spawning and migration at 40 CFR 131.37. These standards establish a salinity standard of 0.44 micro-mhos between 1 April and 31 May for Vernalis, Mossdale, Brandt Bridge to Jersey Point when the San Joaquin River index is greater than 2.5 MAF. The studies USEPA relied on in establishing salinity criteria protective of the migration and spawning beneficial uses of striped bass and splittail are still applicable. [Footnote 81: Turner, J.L. 1972. Striped Bass Spawning in the Sacramento and San Joaquin Rivers in Central California from 1963 to 1972. Calif. Fish and Game, 62(2):106-118; Turner, J.L. and Harold K Chadwick. 1972. Distribution and Abundance of Young-of-the-Year Striped Bass, <i>Morone saxatilis</i>, in Relation to River Flow in the Sacramento-San Joaquin Estuary. Anadromous Fisheries Branch, CDFG: Fraley, T.C. 1966. Striped bass, <i>Roccus saxatilis</i>, Spawning in the Sacramento-San Joaquin Rivers During 1963 and 1964: Radtke, L.D. and Jerry L. Turner. 1967. High Concentrations of Total Dissolved Solids Block Spawning Migration of Striped Bass, <i>Roccus saxatilis</i>, in the San Joaquin River, California. Transactions of the American Fisheries Society. 96:4, 405-407; Radtke, L.D. 1966. Distribution of Adult and Subadult Striped Bass, <i>Roccus saxatilis</i>, in the Sacramento-San Joaquin Delta: Turner J.L and Timothy C. Farley. 1971. Effects of Temperature, Salinity, and Dissolved Oxygen on the Survival of Striped Bass Eggs and Larvae. Calif. Fish and Game 57(4):268-273. 1971: See also, SWRCB. 1988. WQCP excerpts and SWRCB. 1991. Draft WQCP excerpts.]</p> <p>The SED contains no analysis or survey of freshwater invertebrates, especially their eggs and sensitive life stages. Zooplankton is a critical source of food to numerous fish species. Different zooplankton species tend to inhabit freshwater, low salinity zones or high salinity zones. Native copepod and Mysid populations have plummeted. The same applies to the phytoplankton community. There is no acknowledgement, analysis or discussion in the SED on potential salinity impacts to the food web. The SED fails to analyze the potential impact of relaxing salinity standards on fish and lower trophic orders in the Delta and San Joaquin River. Failure to evaluate these impacts of salinity to aquatic life violates CEQA's requirements for analysis and fair disclosure.</p>	<p>The plan amendments will not result in poorer water quality related to salinity. As described in the Executive Summary and throughout the SED, one of the goals of the plan amendments is to maintain or improve salinity conditions in the southern Delta to comply with state and federal antidegradation policies. Please see Master Response 1.1, General Comments, regarding the development of the plan amendments for the SDWQ alternatives.</p> <p>As discussed in Chapter 5, Surface Hydrology and Water Quality, Appendix F.2., Evaluation of Historical Flow and Salinity Measurements of the Lower San Joaquin River and Southern Delta, and Chapter 7, Aquatic Biological Resources, it is not expected that salinity within the southern Delta would exceed historical monthly salinity levels, which generally range between 0.2 deciSiemens per meter (dS/m) (0.134 parts per thousand [ppt]) and 1.2 dS/m, (0.768 ppt). Since salinity conditions would remain within historic levels, there are not expected to be any increases in exposure of sensitive fish species to salinity levels that may adversely affect migration conditions or spawning habitat suitability (see Section 7.4.2 Methods and Approach). These are levels that both striped bass and splittail can tolerate from the egg and larval stages through adults (Lal et al. 1977; Turner and Farley 1971; Verhille et al. 2016; Young and Cech 1996). Similarly, phytoplankton and zooplankton communities would not experience a change from the general range of salinity levels that are present under baseline conditions, and would not be adversely affected.</p> <p>As discussed in Master Response 3.3, Southern Delta Water Quality, the plan amendments for the LSJR flow alternatives would provide incidental benefit to salinity conditions in the south Delta. The program of implementation for the salinity objective requires the objective to be implemented in part through the LSJR flow objectives which would augment flow in the southern Delta in the February through June time frame and result in beneficial effects to the food web. Please refer to Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, for a more detailed discussion regarding anticipated benefits to the food web from the plan amendments.</p>
1184	47	<p>With respect to native plant species, the SED identifies listed plants and acknowledges that no field surveys were conducted. It is not that there is an inadequate analysis of the impacts to riparian and channel vegetation in the South Delta or San Joaquin River, it is that there is</p>	<p>Chapter 8, Terrestrial Biological Resources, Section 8.2.4, Southern Delta, Table 8-5 and Table 8-6 provide information regarding the species, vegetation, and habitat types that occur within the southern Delta and their typical characteristics. As described in Section 8.4.2, Methods and Approach, the existing water quality in the southern Delta generally ranges between 0.2 dS/m and 1.2 dS/m during all months of the year. In</p>

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		<p>simply no analysis!</p> <p>The Delta was historically dominated by freshwater, and the estuary was where the mixing of fresh and salt waters occurred. There are several natural divisions within the Delta and lower San Joaquin River system. Historically, the southern and eastern Delta was dominated by freshwater conditions and once supported myriad native freshwater plant species. A few of these species include common tules (<i>Scirpus acutus</i>, <i>S. californicus</i>), cattails (<i>Typha</i> spp.), common reed (<i>Phragmites communis</i>), swamp knotweed (<i>Polygonum coccineum</i>), marsh bindweed (<i>Calystegia sepium</i>), bur-reed (<i>Sparganium eurycarpum</i>), cinquefoil (<i>Potentilla anserina</i>), twinberry (<i>Lonicera involucrata</i>), dogwood (<i>Cornus stolonifera</i>), buttonwillow (<i>Cephalanthus occidentale</i>), and willows (<i>Salix lasiolepis</i>, <i>S. lucida</i>). This wetland community was once very common, and remnants of these communities still can be found on channel islands and along the water side of levees. Others grow in the water itself. Some of these species, like twinberry (<i>Lonicera involucrata</i>), are extremely sensitive to salt.</p> <p>The SED fails to analyze the potential impact of relaxing salinity standards on native plant species in the Delta and San Joaquin River. Failure to evaluate the impacts of salinity to native aquatic and riparian plant communities violates CEQA's requirements for analysis and fair disclosure.</p>	<p>addition, there is a strong relationship between salinity at Vernalis and salinity in the southern Delta, which increases by a maximum of 0.4 dS/m above the Vernalis salinity at locations downstream. The program of implementation for the SDWQ alternatives would still include the requirement for USBR to maintain salinity levels at Vernalis in accordance with its water rights. As further described in Section 8.4.2, the habitats and the dominant terrestrial wildlife and plant species in the southern Delta tolerate fluctuations in salinity and regularly experience tidal influences and salinity inputs from other sources (e.g., upstream sources). Exact data on the salt tolerance of individual plant species present in the Delta are not readily available, and plant tolerance depends on a host of interrelated factors. However, native Delta plant species are adapted to brackish waters and salinity levels that have historically existed in the southern Delta. Additionally, periodic salinity intrusion into the Delta may help to reduce the abundance and/or distribution of certain harmful invasive species and give native species a competitive advantage (Carter and Nippert 2012). Because salinity in the southern Delta would remain within the historical range, and the terrestrial plant and animal species can adapt to the variable salinity levels that the southern Delta currently experiences, the SDWQ alternatives would result in little to no change from baseline and would have limited potential to affect terrestrial species in the southern Delta. Please see Master Response 3.3, Southern Delta Water Quality, for more information regarding water quality in the southern Delta in response to implementation of the plan amendments.</p>
1184	48	<p>The SED understates potential economic impacts of Lower San Joaquin River flow objectives to hydropower, and does not adequately analyze possible mitigation. The analysis of hydropower in the SED centers on potential impacts of Lower San Joaquin River flow objectives to grid reliability, and concludes that such impacts are less than significant. [Footnote 82: SED Appendix J, p. J-23.] However, while this is one potential impact, there are several others that the SED does not sufficiently analyze.</p> <p>Generally, these impacts are related to a seasonal shift in generation. As the SED shows in figures J-2a and J-2b, the Lower San Joaquin River flow objectives will shift generation from the summer to the spring. The SED also accounts for changes to monthly generation based on changes in head due changes in reservoir elevation, and perhaps to times when required flows exceed turbine capacity.</p> <p>Table 20.3.4-1 shows the basis for price comparison that the SED uses in calculating the differences between baseline generation and generation under project alternatives. However, the price basis is for overall hourly prices. This undervalues that portion of hydropower that provides ancillary services (load following, regulation up or down, spinning reserve, etc.), which are widely considered to be valued about 25% higher than baseload power. In addition, ancillary services are priced in terms of availability rather than actual performance, so that there may be additional value to ancillary services than the hourly value because water promised for generation when needed is not always deployed.</p> <p>The economic analysis in Chapter 20 misses this aspect of hydropower revenue. Because of the Lower San Joaquin River flow objectives, there may be additional times during the spring when operators on each of the tributaries are unable to provide ancillary services because they are running at full baseload capacity or close it, thus having no flexibility to increase or decrease generation. There may also be less flexibility to provide these services at some times during the summer when there is less water available for generation than baseline because operators are delivering less water for irrigation.</p> <p>For those hydropower facilities that provide power to the California Independent Service</p>	<p>Hydropower, as it relates to physical environmental impacts, is addressed in Chapter 14, Energy and Greenhouse Gases, which does use information from Appendix J to inform impact determinations, but also uses other information (e.g., information described in Section 14.2, Environmental Setting, and Section 14.4.2, Methods and Approach). Impact EG-1, Adversely affect the reliability of California's Electric Grid, which relates to hydropower, is determined to be less than significant. However, Impact EG-3, Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and Impact EG-4, Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing GHG emissions, also related to hydropower, are determined to result in significant and unavoidable impacts. Many potential mitigation measures were identified, although as described in Chapter 14, it would be infeasible at this time for the State Water Board to implement these measures.</p> <p>Please see response to comment 1184-40 regarding the scope of the consideration of economics in the SED. In addition, please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding seasonal shifts and hydropower pricing. Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding hydropower ramping (flexibility to increase or decrease generation) and potential over-generation in the spring. Given the relatively small contribution of the plan area hydropower facilities to the California electric energy supply (described in Master Response 3.2), it is unlikely that hydropower effects associated with the plan amendments would necessitate State Water Board participation in the CAISO planning process. However, the State Water Board has communicated in the past with CalISO and the approval of the plan amendments would not preclude the State Water Board from communicating with CalISO in the future depending on need.</p>

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		<p>Operator (CalISO), there is an additional potential economic impact of the Lower San Joaquin River flow objectives. During the spring in some years, particularly wet years, there are times when the baseload price for hydropower actually goes negative, because CalISO foresees or has excess generation on line and is trying to keep generation off the grid. CalISO could mitigate this economic impact by factoring increased San Joaquin tributary hydropower generation as part of its seasonal planning and in its spring market operations, noting that the importance of this issue will likely increase if the Board establishes additional spring flow objectives in the Sacramento River watershed in the future. The Board should exercise its authorities and work with CalISO and perhaps with Pacific Gas & Electric Company to plan for and mitigate this likely perturbation in California's energy markets.</p>	
1184	49	<p>The SED appropriately discloses impacts to groundwater and identifies overallocation of water as the source of groundwater overdraft. Agriculture in the irrigation districts served by the Lower San Joaquin River and its three major tributaries has maintained a veneer of sustainability by supporting the overallocation of surface water with groundwater pumping. Restoration of protective flows for rivers and the Sustainable Groundwater Management Act (SGMA) are not the cause of overallocation: they just daylight it. [Footnote 83: See Section II(A), supra and December 16, 2016 presentation of Chris Shutes, Slide 3 http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/sfb_ssjde_bay_delta/12162016_cspa_shutes.pdf. For statistics on existing conditions of overdraft in the project area, see SED, Table 9-4.]</p> <p>Many water users have objected to the SED's treatment of groundwater, and have criticized the SED and the Board for suggesting that water districts and agricultural water users in general would mitigate the loss of surface water by pumping additional groundwater. However, based on both long-term and recent practice, the SED is correct to assume that agricultural water users will increase groundwater pumping if the Lower San Joaquin River flow objectives reduce surface water available for irrigation. The SED, in Chapter 9, sets a threshold of significance for impacts for such increased reliance on groundwater, evaluates the likelihood that irrigators will pump to surpass that threshold, and concludes that impacts will be significant and unavoidable. [Footnote 84: SED, pp. 9-5 to 9-7.]</p>	<p>The State Water Board appreciates the information provided in the comment that supports the discussions regarding the groundwater impact analysis and mitigation measures in Chapter 9, Groundwater Resources, Section 9.4, Impact Analysis.</p> <p>As noted in the comment, the SED and plan amendments do not require or encourage increased groundwater pumping as a response to reductions in surface water. The SED merely reflects the historical local response to increase groundwater pumping when surface water availability is reduced. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA.</p> <p>Restoration of protective flows for rivers and SGMA are not the cause of groundwater overdraft. The State Water Board also recognizes the negative impacts of overdraft; SGMA was passed by the legislature in 2014 to address overdraft issues. The State Water Board also has a legal mandate to reasonably protect fish and wildlife beneficial uses, which it is proposing to do with the plan amendments. The State Water Board acknowledges it will be challenging, but SGMA compliance cannot occur at the expense of reasonably protecting surface water beneficial uses; both groundwater and surface water must be protected. The plan amendments do not conflict with the principles and goals of SGMA. Rather, both processes allow local entities to comprehensively address groundwater and surface water resources through integrated planning that does not trade impacts between surface water and groundwater.</p> <p>Please see Master Response 3.4, Groundwater Resources and the Sustainable Groundwater Management Act, for a discussion on overdraft as a legacy problem in California, groundwater recharge, and compliance with SGMA and the plan amendments.</p>
1184	50	<p>The general argument of the water users appears to be that groundwater pumping will be less available in the future as a means of mitigating reductions in the allocations of surface water. Stating the issue somewhat extremely, Merced Irrigation District, in its December 19, 2019 presentation at the Board's hearing in Merced, argued that the "SED does not comply with the law" for the following reason: "The Project will result in direct violations of Sustainable Groundwater Management Act (SGMA) by requiring increased pumping at the exact time that SGMA limitations and restrictions on groundwater use will be imposed." [Footnote 85: Merced ID December 19, 2016 presentation to the Board, slide 4. http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/sfb_ssjde_bay_delta/12192016_mercedid.pdf]</p> <p>While this statement overreaches by suggesting that the SED would explicitly require an illegal action, it reflects the general sense among the San Joaquin water users that reducing water use is just not an option. It is like a business that complains it cannot pay off its</p>	<p>Please see response to Comment 1184-49.</p>

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		<p>[groundwater] line of credit while continually overdrawing the [surface water] checking account and relying on the line of credit to make up the shortfall. The circular logic is broken when the SGMA bank begins to demand repayment of the loan on the line of credit: at a certain point, a responsible business needs to reduce spending.</p> <p>The SED is actually quite sober and direct in acknowledging both the overallocation of groundwater in the project area and the responsibility of local agencies to correct it. In this regard, the SED is more explicit and does a better job in analyzing the overallocation of groundwater in the project area than in analyzing the overallocation of surface water: SGMA is now the state’s primary sustainable groundwater management law. Under the SGMA framework, local agencies are tasked with protecting and managing high and medium priority groundwater basins with state intervention to begin by specified dates if local agencies are unwilling or unable to manage. The SGMA deadlines for state intervention are still prospective; therefore, State Water Board mitigation to protect the groundwater basin from the indirect impacts of the LSJR alternatives is infeasible at this time, but mitigation under local authorities is both feasible and required.</p> <p>Possible mitigation measures to reduce or avoid any potential effects include those listed below.</p> <ul style="list-style-type: none"> -Identify the basin’s sustainable yield and implement enforceable groundwater management measures (for maximum pumping or minimum water levels) so that reductions in groundwater pumping would result if certain thresholds are met. -Establish water conservation measures, such as increased efficiency for municipal and industrial uses or conversion of irrigated land to crops that require less water, such that reductions in groundwater pumping would result. -Establish a conjunctive water management program that would divert surface water during non-irrigation months (e.g., October-April) during wet years into unlined canals and designated fields to recharge the groundwater basin. <p>Thus, at this time, local agencies are vested with the mandatory duty to achieve sustainable groundwater management, which includes not causing undesirable results such as significant and unreasonable reduction of groundwater storage and degradation of water quality. Therefore, these local agencies with authority over the Extended Merced Subbasin can and should exercise their full authorities to address substantial depletion of groundwater supplies and water quality degradation, both under SGMA and their police powers. Under that authority, they can and should also implement those mitigation measures identified above. Doing so would prevent groundwater depletion and water quality impacts, mitigate those impacts, or both. [Footnote 86: SED, p. 9-61.]</p>	
1184	51	<p>While we are very skeptical that the SED’s proposed mitigation of diverting water to canals and fields is efficient enough to pass the test of waste and unreasonable use, we completely agree that the various groundwater basins (and surface watersheds) need to bring water use into a condition of sustainable balance. In addition, it is important to note that in both the Turlock and Modesto subbasins, the primary source of groundwater recharge is the result of diverted for irrigation that is not directly used by plants. As the overlying irrigators implement efficiencies in surface water use in response to reduced levels of surface water allocation that are more balanced with instream uses and carryover storage, the groundwater line of credit will be further reduced. Irrigation districts in the project area will</p>	Please see response to Comment 1184-49.

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		<p>need to construct and bring on line more efficient and directed infrastructure for groundwater recharge. Merced ID is currently the most advanced with such infrastructure, but it will need to step up its efforts, as will its counterparts on the Tuolumne and the Stanislaus.</p> <p>In summary, the SED does not use the alternative of groundwater pumping to understate the impacts of reduced allocations of surface water. Rather, the SED simply acknowledges that water users will push the limits of groundwater pumping to the degree that groundwater regulators allow it. It is true that the SED elsewhere does not sufficiently analyze the water supply impacts of reduced diversion surface water allocations that implementation of the Lower San Joaquin River Flow Objectives will require. However, the SED is direct and clear in stating that increased groundwater pumping is not the magic solution. The chief complaint of water users is that SED's analysis of groundwater does not offer a substitute water supply for reduced diversion allocations of surface water. The concern of water users appears to us to be less a concern with the SED than a concern that they might actually have to change their business model to accommodate reducing their overall use of water.</p>	
1184	52	<p>Appendix K of the SED proposes water quality objectives that will not fully protect beneficial uses. The primary purpose of water quality control planning under the CWA is to prepare or develop comprehensive programs for preventing, reducing, or eliminating the pollution of the navigable water and groundwater and improving the sanitary condition of surface and underground waters. In the development of such comprehensive programs, "due regard shall be given to the improvements which are necessary to conserve such waters for the protection and propagation of fish and aquatic life and wildlife, recreational purposes, and the withdrawal of such waters for public water supply, agricultural, industrial, and other purposes." [Footnote 87: 33 USC § 1252.]</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the science and policy justification for the LSJR plan amendments. Please refer to Master Response 3.1, Fish Protection, for responses to comments regarding the plan amendments and benefits to fish.</p>
1184	53	<p>The SED does not comply with the requirements of the federal Clean Water Act. The Board fails to consider new water quality objectives for the most sensitive beneficial uses in the Bay-Delta Estuary under the federal CWA and its implementing regulations administered by the US Environmental Protection Agency (hereinafter "EPA"). The goals of the CWA include restoring and maintaining the chemical, physical, and biological integrity of the nation's waters through the elimination of discharged pollutants; protecting and propagating fish, shellfish, and wildlife; prohibiting discharge of toxic pollutants; and to recognize, preserve, and protect the primary responsibilities and rights of states to prevent, reduce, and eliminate pollution, plan the restoration, preservation, and enhancement of land and water resources.</p> <p>Research priorities funded under the CWA are intended to foster prevention, reduction and elimination of pollution in the waters of the United States. The heart of water quality control under these laws is, first, the designation of the beneficial uses to be protected, and second, the setting of standards, criteria, and objectives that provide reasonable protection for those beneficial uses.</p> <p>The Board is obligated by the CWA to operate a "continuing planning process," by which the Board submits any revisions or new water quality standards to the EPA Administrator for review. Such standards are to consist of "designated uses" and water quality criteria or objectives that represent the level of protection for the beneficial use. These standards are intended to protect the public health and enhance water quality while taking into</p>	<p>Please refer to Master Response 1.2, Water Quality Control Planning Process, and Master Response 2.1, Amendments to the Water Quality Control Plan, for discussion on the State Water Board's authorities and State Water Board compliance with relevant laws, including the CWA. Please also see response to comment 1184-8 on the goals of the Clean Water Act and protecting the most sensitive beneficial uses where a water body has multiple beneficial use designations.</p> <p>As described in Chapter 5, Surface Hydrology and Water Quality, and Master Response 3.3, Southern Delta Water Quality, the plan amendments would generally improve water quality. Fish benefits are described in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, and in Master Response 3.1, Fish Protection.</p>

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		<p>consideration the needs of public water supplies, fish and wildlife, recreation, and agricultural and industrial uses. [Footnote 88: 33 U.S.C. 1313 (c)(2)(A). ("Enhance" means to "intensify, increase, or further improve the quality, value, or extent of" something. One meaning of "propagate" is to "cause (something) to increase in number or amount." "Restore" can mean to "return (someone or something) to a former condition, place, or position."]. In general, the plain language of Clean Water Act policies on protection of beneficial uses is not merely intended to maintain water quality but to increase or improve water quality as well as to return water quality to former conditions of chemical, physical, and biological integrity.]</p> <p>Under Porter-Cologne, beneficial uses may include domestic, municipal, agricultural and industrial water supplies; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. [Footnote 89: California Water Code §13050(f).] Since 1991, the Board has designated seventeen specific beneficial uses of water in its Bay-Delta Estuary water quality control plans, including recreation and preservation and enhancement of fish and wildlife resources. [Footnote 90: These beneficial uses include: municipal and domestic supply, industrial service supply, industrial process supply, agricultural supply, groundwater recharge, navigation, contact and non-contact water recreation, shellfish harvesting, commercial and sport fishing, warm fresh water habitat, cold fresh water habitat, migration of aquatic organisms, spawning, reproduction and/or early development of fish, estuarine habitat, wildlife habitat, and rare, threatened or endangered species' habitats. See also California Water Code §1243.]</p> <p>Thus, in determining the amount of water available for appropriation, the Board must take into account the amount of water needed to remain in the source for protection of beneficial uses. [Footnote 91: California Water Code Section §1243.5.] Despite this charge, the recommended objectives in the SED would not enable the Board to use its water quality control powers to materially improve water quality in the South Delta and the lower San Joaquin River. On the contrary, the Board's proposed actions would relax existing standards and would maintain insufficient flow objectives for fish and wildlife, diminishing water quality and further harming the Delta.</p>	
1184	54	<p>The SED recommends a February-June flow objective for the Lower San Joaquin River of 30%-50% of unimpaired flow that is well below the 60% flow that the Board identified in 2010 as protective of fish and wildlife. The SED should have first identified the various water demands for beneficial uses, which of the beneficial uses are the most sensitive, the increment of flows available for riparian and appropriative consumptive use, and then proposed flow objectives in accordance with those findings.</p> <p>The Board failed to comply with this method at each step. First, the Board has not designated beneficial uses for which its proposed southern Delta salinity objectives are intended to protect. Second, the Board proposes Lower San Joaquin River flow objectives that maintain the status quo, albeit through a new method of regulation. Third, the Board fails to include an analysis of water availability or to take full account of competing demands for water from all beneficial uses in that context. Finally, the Board fails to set objectives adequate to address water quality as it relates to dissolved oxygen and water temperature.</p> <p>Old River experiences frequent fish kills caused by low dissolved oxygen, which has long been known to the Regional Board. [Footnote 92: Several years ago, CSPA took staff from the Central Valley Regional Water Quality Control Board (including Mark Gowdy) on a trip</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding consideration of beneficial uses. The SED explicitly identifies that the proposed SDWQ water quality objectives are to protect agricultural beneficial use, the most sensitive beneficial use as it relates to salinity. Please refer to the Executive Summary, Chapter 3, Alternatives Description, and Appendix K, Revised Water Quality Control Plan. The formal name of the agriculture beneficial use in the Bay-Delta WQCP is "Agricultural Water Supply."</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the science and policy support for adopting the plan amendments. Please see Master Response 2.2, Adaptive Implementation, for additional discussion regarding the plan amendments and the 2010 Report Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. The plan amendments increase river flow from February to June in the three LSJR tributaries, not maintain the status quo. The increased flows are a change from baseline conditions and provide habitat improvements relative to baseline. Please see Master Response 3.1, Fish Protection, and Chapter 19, Analysis of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, for additional information regarding benefits to fish habitat from plan amendments.</p> <p>The SED evaluates water supply availability, different demands for water, and multiple beneficial uses</p>

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		<p>on Old River and showed them a massive fish kill caused by anoxic conditions.] Dissolved oxygen results collected at the real-time monitoring station in Old River at Tracy Wildlife Association reveals that dissolved oxygen levels cycled as low as 0.5 mg/l mid-April through mid-August of 2012. The Board must establish specific dissolved oxygen standards in Old River to protect beneficial uses.</p>	<p>throughout Chapters 5 through 17. For example, Chapter 11, Agricultural Resources, identifies potential impacts on agricultural resources as a result of potential reductions in water supply and Chapter 13, Service Providers, qualitatively evaluates potential impacts on service providers. Chapter 20, Economic Analyses, evaluates economic considerations and potential economic effects associated with water supply.</p> <p>The plan amendments address river flows because the magnitude, duration, frequency of river flows during the February to June time period are a dominant factor affecting habitat conditions, such as temperature, and salmon abundance in the basin (see Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, and see Master Response 3.1, Fish Protection).</p> <p>Modification of dissolved oxygen objectives in the Delta or Lower San Joaquin River are not included in the plan amendments. The 2009 Period Review of the Bay-Delta Plan recommended that the State Water Board conduct further review of many objectives including Delta outflow, export/inflow, Delta Cross Channel Gate closure objectives, Suisun Marsh Objectives, Reverse Flow Objectives, and Floodplain Habitat Flow Objectives. The 2009 Periodic Review did not recommend the State Water Board further review the dissolved oxygen objectives. Accordingly, the State Water Board released a notice of preparation for the update and implementation of the Bay-Delta Plan in February 2009. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for why the State Water Board chose to regulate flow over dissolved oxygen and temperature to protect fish and wildlife beneficial uses.</p>
1184	55	<p>In order to begin to mimic natural hydrologic conditions in the estuary, water temperature must be taken into account. Despite this logical analysis, the SED fails to propose objectives that protect the identified beneficial uses of cold fresh water habitat; migration of aquatic organisms; spawning, reproduction and/or early development of fish; and rare, threatened or endangered species' habitats from elevated temperatures. The San Joaquin River (Merced to Delta boundary), the lower Stanislaus, the lower Tuolumne and the lower Merced Rivers are identified by the CWA as impaired waterbodies because of elevated temperatures. [Footnote 93: CWA Section 303(d); SED, Chapter 5, Table 5-4.]</p> <p>The SED analyzed the impacts resulting from changes in exposure of fish to stressful water temperatures (AQUA-4) of each of the alternatives and concluded that lower flows increased significant impacts while increased flows decreased impacts. While CEQA is served by a comparison of the relative significant impacts between the considered alternatives, the federal CWA is not. The SED is reviewing a water quality control plan developed pursuant to the CWA, and the CWA requires the protection of identified beneficial uses.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for why the State Water Board chose to regulate flow over dissolved oxygen and temperature to protect fish and wildlife beneficial uses and how the plan amendments do protect fish and wildlife and agricultural beneficial uses.</p>
1184	56	<p>Tables 7-20 a-d through 7-24 a-d of the SED show masses of exceedances of EPA temperature thresholds for life stages of salmon and for summer rearing of steelhead, both under baseline conditions and under each project alternative, in the Lower San Joaquin River and in each of its major tributaries. [Footnote 94: See SED Chapter 7, Tables 7-20 a-d through 7-24 a-d and accompanying narrative, pp. 7-102 through 7-125.] The modeling exercise makes no effort to identify those locations at which temperature thresholds are achievable at what times under a suite of flow, diversion allocation and carryover storage scenarios. Exceedances of thermal thresholds are abundant in months from April through November in the baseline condition, and for the most part would continue under the modeled flow alternatives.</p> <p>The analysis of thermal conditions in Chapter 7 of the SED is completely perfunctory because it provides the Board no insight as to how and where to set temperature objectives,</p>	<p>Please see Master Response 3.1, Fish Protection, for responses to comments regarding temperature conditions that exceed the US EPA Region 10 recommended temperature criteria for salmonids. The State Water Board is not obligated under the federal Clean Water Act (CWA) to adopt temperature objectives in order to address the temperature impairments identified under CWA section 303(d) on the Stanislaus, Tuolumne, and Merced Rivers. Generally, 303(d) listed impairments are addressed by a total maximum daily load (TMDL), although other methods for eliminating the impairment and restoring the beneficial use can be identified and employed. Moreover, the proposed flow objectives will protect fish and wildlife beneficial uses by improving temperatures in these rivers. SED Appendix K states that biological goals will be used to inform the adaptive methods, evaluate the effectiveness of this program of implementation, the SJRMEP, and future changes to the Bay-Delta Plan. Reasonable contributions to these biological goals may include meeting temperature targets.</p>

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		<p>under what conditions, and in what years. The SED complacently catalogues temperature exceedances under the apparent theory that if they don't get worse, the Board can meet its CEQA requirements. The modeling in the SED goes so far as to use perfect foresight to show that some exceedances could be zeroed out by "flow shifting." Generally, the modeling shows that, as flows increase, temperature decreases, at least during those periods of augmented flow.</p> <p>The lower San Joaquin, Stanislaus, Tuolumne and Merced rivers are listed as impaired waterbodies due to elevated temperatures. The Board has an obligation to set objectives to address this impairment. However, the SED proposes no objectives to protect the identified beneficial uses of cold fresh water habitat; migration of aquatic organisms; spawning, reproduction and/or early development of fish; and rare, threatened or endangered species' habitats from elevated temperatures. This fails to comply with the requirements of the federal CWA.</p>	
1184	57	<p>The SED's antidegradation analysis is incomplete and inadequate. We are delighted to see that the 2016 SED now contains an antidegradation analysis. Unfortunately, the analysis is incomplete and inadequate, and fails to comply with state and federal antidegradation requirements and CEQA's requirements for fair disclosure and analysis. Unlike state law, the federal Clean Water Act requires that water quality standards must fully protect--not reasonably protect-- all identified beneficial uses. Designated beneficial uses in the Delta include, among others: Municipal and Domestic Supply; Industrial Service Supply; Industrial Process Supply; Agricultural Supply; Ground Water Recharge; Commercial and Sport Fishing; Water Freshwater Habitat; Migration of Aquatic Organisms; Spawning, Reproduction and/or Early Development; Estuarine Habitat and Wildlife Habitat.</p> <p>The SED proposes to increase the existing 0.7 dS/m April-August salinity limit in the south Delta by approximately 43% to 0.1 dS/m. The southern Delta is identified as impaired because of electrical conductivity (salinity) on the current CWA Section 303(d) list, and the existing salinity standard is routinely violated. Increasing the water quality standard would eliminate most of these ongoing violations and establish 0.1 dS/m EC as protective of beneficial uses. As discussed at considerable length, the SED fails to analyze the effects of increased salinity on fish, freshwater invertebrates, aquatic and riparian vegetation, which are identified beneficial uses. Indeed, as the USEPA acknowledged in its promulgation of federal water quality standards for the Delta at 40 CFR 131.37, the existing salinity standard is not protective of striped bass and splittail spawning.</p> <p>Moreover, the SED's analysis of salinity on south Delta agriculture is flawed because its recommendations rely on a report whose data is unsuitable for analysis of south Delta agriculture and whose calculated leaching fractions are seriously incorrect. A more complete antidegradation analysis would show that the proposed weakening of southern Delta salinity standards would not comply with the antidegradation requirements of the federal CWA.</p>	<p>The proposed southern Delta salinity objectives protect the most salt sensitive beneficial use, which is agriculture. If salinity levels are maintained to protect agriculture, then all other beneficial uses will also be protected.</p> <p>As stated in Chapter 7, Aquatic Biological Resources, "Indicator species are able to tolerate salinity changes within the range of 0.2 dS/m and 1.2 dS/m, as these salinity levels are within the general historical salinity conditions of the southern Delta." Under the updated salinity objectives it is not expected that salinity conditions in the southern Delta will exceed this range because the USBR will be required to continue maintaining the EC at Vernalis at 0.7 dS/m April–August and 1.0 dS/m September–March, as it is under the current objectives, to provide assimilative capacity downstream of Vernalis. Therefore aquatic biological resources will not be impacted by the change in the salinity objective. Please see Chapter 7, Aquatic Biological Resources, for full discussion of why the SDWQ alternatives will not impact aquatic biological resources.</p> <p>Furthermore, by maintaining the 0.7 dS/m salinity objective at Vernalis from April-August, salinity will not increase above baseline conditions and there will be no degradation in water quality. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of why the southern Delta Salinity objectives are being updated. Please also refer to Master Response 3.3, regarding comments on the adequacy of the Hoffman Report.</p> <p>Finally, please see Master Response 3.1, Fish Protection, for discussion of the 1995 EPA salinity standard.</p>
1184	58	<p>The SED fails to comply with the requirements of CEQA. The SED fails to consider the whole of the action in the Sacramento-San Joaquin Bay-Delta. The SED fails to establish an accurate and complete baseline for the project. The SED does not define its proposed project. The SED does not analyze a reasonable range of alternatives: its alternatives are incomplete; they are unclear; they exclude the San Joaquin River upstream of Merced confluence; they are simplistic and do not support efficient allocation of water; and they</p>	<p>The commenter is summarizing the comments raised in its letter, which have been addressed above. No further response is necessary.</p>

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Ltr#	Cmt#	Comment	Response
		<p>choose flow objectives that will not protect fish and wildlife.</p> <p>The SED fails to adequately provide the methodology and the analysis to support the Board's affirmative duty to protect the public trust. The SED and Appendix K improperly rely on adaptive management. The analysis of the proposed relaxation of south Delta salinity standards violates CEQA's requirement for analysis and fair disclosure. The SED understates potential economic impacts of Lower San Joaquin River flow objectives to hydropower, and does not adequately analyze possible mitigation. The SED does not comply with the requirements of the federal Clean Water Act. Appendix K of the SED proposes water quality objectives that will not fully protect beneficial uses. And the SED's antidegradation analysis is incomplete and inadequate.</p> <p>For these reasons, the SED is deficient. The Board must correct these deficiencies in a new environmental document.</p>	
1184	59	[ATT2:ATT1: Figure 1. Lower San Joaquin River and its three main tributaries below Merced, California. SWRCB 2012.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1184	60	<p>[From ATT2]</p> <p>Large main-stem water supply reservoirs on the Stanislaus, Tuolumne, and Merced and associated water supply developments have markedly altered the rivers' flow regimes to the point that existing salmon and steelhead populations in these rivers are now threatened with extinction. [Footnote 1: Biological and Conference Opinion on the Long-Term Operations of the Central Valley Project (CVP) and State Water Project (SWP). National Marine Fisheries Service, 2009. http://swr.nmfs.noaa.gov/ocap.htm. Also, Carl Mesick, Mesick, C. 2010. The High Risk of Extinction for the Natural Fall-Run Chinook Salmon Population in the Lower Merced River due to Insufficient Instream Flow Releases, November 30, 2010, and The High Risk of Extinction for the Natural Fall-Run Chinook Salmon Population in the Lower Tuolumne River due to Insufficient Instream Flow Releases, September 4, 2009. Both of these latter documents were submitted to the SWRCB on December 6, 2010 as supporting documents to comments by CSPA, C-WIN and AquAlliance on the Draft Technical report on the Scientific Basis for Alternative San Joaquin River Flow and South Delta Salinity Objectives.]</p> <p>While the annual salmon runs vary widely, there has been a continuing long-term downward trend in escapement in each of these rivers (see Figure 2 [ATT2:ATT3]). Salmonid populations in these tributaries need flows of higher magnitude, cooler water temperatures and seasonal variability to recover. We agree with the Board that higher flows will improve connectivity with the Delta and will provide better rearing and migration habitat in the three tributaries, the lower mainstem San Joaquin River, and the Delta. Further, we believe an increase in the amount of water from the San Joaquin watershed that reaches San Francisco Bay will increase the production of anadromous adult salmonids from the entire Central Valley, not just the San Joaquin River. Higher inflow from the San Joaquin River will also significantly benefit those resources that depend on the Delta, including all native fishes of the Sacramento River watershed that use the Bay-Delta.</p>	Please see Master Response 1.1, General Comments, including information about the LSJR alternatives and alternatives development, regarding comments that are general in nature and support the plan amendments.
1184	61	[ATT2:ATT3: Figure 2. Escapement of fall-run Chinook salmon to the San Joaquin River as comprised by individual tributary and hatchery counts. (Source of data: CDFW GrandTab.)	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

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1184	62	<p>[From ATT2]</p> <p>A close look at recruitment per spawner in the San Joaquin salmon population over the past 40 years (Figure 3 [ATT2:ATT4]) provides clear evidence that recruitment suffers in years with dry winter-springs or dry falls. That relationship overwhelms the background relationship between spawners and recruits three years later.</p> <ol style="list-style-type: none"> 1. Recruitment is significantly depressed in drier years compared to wetter years. The major contributing factor is likely poor survival in winter-spring of juveniles in their first year. 2. Recruitment is severely depressed for year classes rearing in critical years and returning as adults two years later in critical years (e.g., 88, 89). 3. Recruitment can be depressed for year classes with good winter-spring juvenile rearing conditions but poor conditions when adults return (e.g., 05, 06). 4. Recruitment can be enhanced for year classes with poor winter-spring young rearing conditions but very good fall conditions for adults returning (e.g., 81). 5. Recruitment was enhanced in recent years despite droughts likely as a consequence of pulsed spring and fall flow requirements in biological opinions since 2009 (e.g., rearing years 09-13 in Figure 3). 6. There is an underlying positive spawner/recruit relationship (a positive relationship between the number of spawners and the number of recruits returning three years later), but it is overwhelmed by the effect on recruitment of flow-related habitat conditions. 7. Poor ocean conditions in 2005-2006 likely contributed to poor recruitment. <p>The same basic pattern holds in the spawner-recruit relationship for the Tuolumne River, a subset of the overall San Joaquin relationship (Figure 4 [ATT2:ATT5]). A possible exception to the overall pattern is the lower recruits for rearing years 2012 and 2013, which indicates less response to recent higher San Joaquin watershed recruitment trends in the Tuolumne River (Figure 2 [ATT2:ATT32]). The reason for this is likely due to the lack of a fall flow pulse in the Tuolumne River in 2014 and 2015, since the existing FERC license for the Don Pedro Project requires no winter pulse in the Tuolumne River in Critically Dry water years and there is no over-riding provision for a fall pulse in the Tuolumne in the NMFS OCAP biological opinion as there is for the Stanislaus River (Figure 5 [ATT2:ATT6]).</p>	<p>Please see Master Response 1.1, General Comments, including information about the LSJR alternatives and alternatives development, regarding comments that are general in nature and support the plan amendments.</p> <p>Please also see Master Response 2.2, Adaptive Implementation, regarding the proposed adaptive implementation process, including the development of biological objectives and metrics for measuring progress toward objectives.</p>
1184	63	[ATT2:ATT4: Figure 3. Recruits per spawners relationship ((log10X)-2) for San Joaquin River fall run Chinook salmon 1976-2015.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1184	64	[ATT2:ATT5: Figure 4. Recruits per spawners relationship ((log10X)-2) for Tuolumne River fall run Chinook salmon 1976-2015.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1184	65	[ATT2:ATT6: Figure 5. River flow in the Tuolumne and Stanislaus Rivers from fall 2013 to fall 2016.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1184	66	<p>[From ATT2]</p> <p>Recommended Water Temperature Targets for the Lower San Joaquin River and Tributaries</p>	The plan amendments aim to protect fish and wildlife beneficial uses by providing more flow in the subject waters, which will substantially improve temperatures for salmonids. Thus, at this time, the State Water Board is not proposing temperature water quality objectives, but appreciate the commenter's input.

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		<p>The following are appropriate targets for water quality for native fish habitat in the lower San Joaquin River and its three major tributaries: Stanislaus, Tuolumne, and Merced Rivers. The targets are based on well-established science on salmon ecology used throughout western North America including California. These targets are not intended to represent optimal temperatures for all times of year, or to suggest that, for instance, a water temperature in mid-January of 65° is a desired condition. Rather they are intended to represent targets above which the average daily temperature should not rise.</p> <p>Fall Targets (October 1 or October 8, based on water-year type, to mid-December):</p> <ol style="list-style-type: none"> 1. Target: 65°F/68°F(a) daily-average water temperature in the lower San Joaquin at Vernalis gage. Protects adult salmon migrants from being blocked, hindered, or stressed during their migration through the lower San Joaquin River to tributary spawning streams. 2. Target: 60°F/65°F(a) daily-average water temperature at lower gaging stations in three tributaries. Optimal spawning temperatures are below 60°F. Pre-spawn adult salmon water temperatures above 65°F are highly stressful leading to increases in pre-spawn mortality, loss of energy, and lower egg viability. <p>Rationale: to improve water temperatures, and dissolved oxygen levels. Central Valley fall run salmon begin their migrations from the ocean in summer, early migrants are hindered from moving up the rivers by high water temperatures in the lower Sacramento and San Joaquin Rivers often until the fall. The high water temperatures are caused by a combination of warm air temperatures and low flow releases from Valley reservoirs to their tailwaters. In extended droughts high water temperatures can be associated with the loss of coldwater pools in reservoirs from low storage levels.</p> <p>Winter-Spring Targets (mid-December through mid-June):</p> <ol style="list-style-type: none"> 1. Target: 65°F/68°F(a) daily-average water temperature in the lower San Joaquin at Vernalis gage. Water temperatures below 65°F are optimal for growth and survival of emigrating and rearing juvenile Chinook salmon and steelhead. Water temperatures above 68°F are very stressful, severely reducing growth and survival and increasing susceptibility to predation. 2. Target: 60°F/65°F(a) daily-average water temperature at lower gaging stations in three tributaries. Water temperatures below 60°F are optimal for survival of salmon and steelhead embryos in gravel spawning beds. Above 60°F embryos and emerging fry would be stressed resulting in lower growth and survival. (Above 60°F predation rates on juvenile salmon rearing and emigrating in the Tuolumne River increased from 3-16% below 60°F to 31-71% above 60°F [Footnote 2: http://www.donpedro-relicensing.com/Documents/P-2299_DP_ISR_W-AR-07_PredationStdyRept_130117.pdf, p. 5-15., which is consistent with the general literature.) A target of 65°F on the lower river gage would allow a 60°F target to be met at middle and upper river gages. <p>Summer Targets (June through mid-September):</p> <ol style="list-style-type: none"> 1. Target: 65°F/68°F(a) daily-average water temperature at locations specified by water year type on each of the three tributaries. Optimal growth and survival occurs for over-summering juvenile salmon and steelhead below 65°F. Stress induced lower growth, survival, and increased susceptibility to predation occurs above 68°F. <p>Footnote(a) on management of flow and water temperature: In limited water supply years,</p>	

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		<p>water temperature and flow criteria could be adjusted by date and location (e.g., Ripon to Oakdale on Stanislaus, Modesto to Waterford on Tuolumne, Stevinson to Snelling on Merced), or specific criteria (e.g., 60° to 65°F, or 65° to 68°F). Carryover storage must be adequate to sustain the upper-most criteria especially during the summer and early fall.</p>	
1185	1	<p>Flows at Vernalis are generally accepted as the best measure of net flows from the San Joaquin River into the Delta. A perusal of the quantitative data clearly shows that Vernalis flows are most often significantly less than Delta exports. Although the exports are justified as the harvesting of unappropriated flows of the Sacramento River entering the Delta, it is hard to escape the obvious observation that Vernalis flows will be the first to be pumped. Since export flows dominate over Vernalis flows, the bulk of the export flows must be made up by the transmigration of Sacramento flows across [the] Delta which, because of Delta hydraulic considerations, cause those flows to migrate generally to the south Delta entering below the export pumps, hence the reverse flows. Because Vernalis flows contribute little or nothing to freshwater flows in the south Delta, they can do little to alleviate salinity problems in the south Delta. This is especially true when export pumps are in a position which will scavenge most of the Vernalis flows before they reach the downstream parts of the south Delta. This necessarily leave the burden of salinity control to the flows that come from the Sacramento River.</p>	<p>Phase I of the update of the Bay-Delta Plan addresses potential changes to San Joaquin River flow requirements for the protection of fish and wildlife and potential changes to southern Delta salinity requirements for the protection of agriculture. The Sacramento Bay-Delta watershed update addresses changes to the Bay-Delta Plan to protect native fish and wildlife in the Sacramento River, Delta, and associated tributaries. Exports and Delta outflow will be addressed in Sacramento Bay-Delta watershed update.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the approach to the Bay-Delta Plan Updates. Please see Chapter 3, Alternatives Description, for a description of the plan amendments under consideration as part of Phase I.</p> <p>While it is true that much of the San Joaquin River water is ultimately exported at the CVP and SWP export pumps, the San Joaquin River water fills a large portion of the southern Delta before it is exported. Increases in San Joaquin River flow help salinity in the Delta by several mechanisms. Increased freshwater from the Eastside tributaries will reduce the EC of water at Vernalis. In addition, increased San Joaquin River flows help dilute local high-salinity accretions in the southern Delta. And furthermore, increases in San Joaquin River flow may reduce the volume of Sacramento River water that is exported and can allow Delta outflow to increase, thereby decreasing seawater intrusion.</p> <p>Please see Chapter 5, Surface Hydrology and Water Quality, and Appendix F.2, Evaluation of Historical Flow and Salinity Measurements of the Lower San Joaquin River and Southern Delta, for a discussion of the effects of Vernalis flow on southern Delta EC, and Master Response 3.3, Southern Delta Water Quality, for more information regarding salinity.</p>
1185	2	<p>In the analysis that follows we demonstrate why the Vernalis flows tend to be very inadequate most of the time, how the San Joaquin, Tuolumne, Merced, and the Stanislaus river operations allow little flow to reach the Delta, and why fall-early winter flows are very indicative of the magnitude of spring flows and a better predictor of those flows that the existing Water Year Type indicator used in operations. We also present findings on the relationship between Old River, Vernalis, and Export flows which strongly suggest that to meet the objectives of the amended Bay-Delta Plan, either export flows must be curtailed very significantly or Vernalis must be increased significantly or some combination of those two operational changes.</p> <p>Analysis: In a similar study (Testimony given at SWRCB on the DWR petition to change the point of diversion on the Sacramento River, November, 2016) of the Sacramento River and its watershed we investigated the fundamental character of the hydrology of that watershed in terms of its runoff distribution. It was found that the distribution of annual runoff over a 100-year record was definitely bi-modal; that is, about 56% of the years were below average and 46% were above average with very few years near the average. The investigation further found that if cumulative runoff by the end of January of a water year was less than about 4.0 million acre-ft. (as measured by the 4-river index) the ensuing year was very likely to be dry as well. It was found that the Water Year Type index (derived from the 4-river index) had no scientific merit because it relied on runoff in the previous water year, which relationship could not be confirmed statistically.</p>	<p>Please see Master Response 1.1, General Comments, for information regarding the California WaterFix Project. As described in Master Response 1.1, California WaterFix is a completely separate project from the plan amendments and the LSJR and SDWQ alternatives described in the SED.</p> <p>The comment suggests reverse flows in Old and Middle Rivers would be reduced and salinity in the southern Delta would be improved by a reduction in exports and an increase in flow at Vernalis, and that the increase in flow from Vernalis could come from increases in flow from the upper SJR and the three eastside tributaries.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, for discussion of the water quality control planning process, including the State Water Board’s protection of beneficial uses in the Bay-Delta and tributary watersheds through independent proceedings. The plan amendments as described in Master Response 2.1, Amendments to the Water Quality Control Plan, and Chapter 3, Alternatives Description, would not alter flow requirements from the upper San Joaquin river nor alter regulations affecting Delta exports. The plan amendments would result in increased flows at the downstream ends of the Tuolumne, Stanislaus, and Merced Rivers. As described in Appendix K, ‘the State Water Board would exercise its authority to ensure the flows required to meet the LSJR flow objectives are used for their intended purpose and are not diverted for other purposes’. Water quality objectives potentially affecting exports are being considered by the State Water Board in the separate and independent process related to the Sacramento River and Delta Tributary objectives (as described in Master Response 1.2). Please see Master Response 2.1 and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the Upper</p>

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		<p>The same type investigation was performed on the San Joaquin water shed using that basin's 4-river index. The investigation revealed pretty much the same conclusions. Although the San Joaquin basin runoff was not bi-modal, it was highly skewed to the dry side and presented the same early indication of a dry water year. Figure 1 [ATT1] presents a scatter plot of the total 4-river index versus the cumulative runoff through the end of March. (About 25% of the basin runoff occurs before the end of March). If that cumulative runoff is less than 1.6 million acre-ft. it is very likely that the ensuing year will be less than average. As was the case in the Sacramento watershed, the average again bisects the runoff record in roughly equal numbers of dry and wet years with not many years near average. All of this is made clear in Figure 1.</p> <p>An examination was also made of whether or not the previous water year had any influence on the ensuing water year. The correlation of the total runoff for the ensuing water year against the previous water year's spring runoff (which constitutes about 75% of a water year runoff) was found to be statistically insignificant, which means that any use of the present Water Year Type index to guide hydrologic operations is without merit. Figure 2 [ATT2] presents the results of the correlation analysis. The correlation coefficient is -0.0283 which signifies there is very little probability of a true relationship.</p> <p>The next investigation sought to determine why Vernalis flows are chronically low. In drought episodes they are low year after year. Figure 2-7 from South Delta Water Quality studies (page 2-10 and here reproduced as Figure 3 [ATT3]) shows that no significant runoff occurs below Friant Dam except in the exceptionally wet years of 2005 and 2006. The figure, which presents the unimpaired runoff at Friant and the corresponding runoff below Friant, demonstrates well the difficulty. The text accompanying the figure states that for all the years from 1999 to 2008 except for years 2005 and 2006 the average runoff below Friant was 125 cfs. This compares to an unimpaired flow over the same period that is generally 5000 cfs or more. Corresponding runoff records for the Tuolumne and Stanislaus indicated the same pattern.</p> <p>These rivers are so highly regulated for water diversions little water is released into the main stem of the San Joaquin. Figure 4 [ATT4] compares the Vernalis flows ("column C" in the figure) with the sum of the San Joaquin, Tuolumne, and the Stanislaus ("column A" in the figure) (the Merced River flows could not be retrieved easily from the CDEC data base). As shown in the Figure, the Vernalis flows are about one-half to three-quarters greater than the sum of the Tuolumne, Stanislaus, and San Joaquin flows. The difference has to be explained by the regulated releases from the Merced and all the flows from the minor unregulated streams between Vernalis and the San Joaquin. Some of the differences may be explained by measurement errors.</p> <p>The Tuolumne and San Joaquin watersheds are about equal while the Stanislaus is about 60% to 70% of either of those. Between them they provide about 85% of the 4-river Index and the Merced provides another 10% so that the 4-river Index captures about 95% of the unimpaired flow. Clearly, if it is desired to increase flows significantly at Vernalis as part of a plan to improve Delta health, it will be necessary to release more flow from these rivers into the main stem of the San Joaquin.</p> <p>One of the main concerns with Delta operations are the reverse flows that occur in Old and Middle rivers during heavy pumping at the export pumps. Old and Middle rivers are part of the San Joaquin river system on the south side of the Delta. The primary flows into and out of the Delta are the Sacramento River on the North Delta, the San Joaquin into the South</p>	<p>San Joaquin River.</p> <p>To review responses to comments submitted by other entities within the comment period on the 2106 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p>

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		<p>Delta, export pumping from the South Delta, and outflows to the Bay system at the Western Delta. The flow at Vernalis is the best measure of San Joaquin flows into the Delta; Freeport is the best measure of Sacramento flows into the North Delta; and export flows are those pumped from the South Delta by the CVP at Tracy and the SWP at Clifton Court Forebay.</p> <p>Table 1 [ATT5] presents those flows for the period 1981 to 2006. Using the data presented in Table 1 we examined through regression analyses several possible relationships between the flows at Vernalis and Sacramento River and Old and Middle river. By far the best result was obtained with "OldRiverFlow" regressed against "Excess", which is the difference between Vernalis and Exports. When Exports are greater than Vernalis flows the result is entered as a negative. Figure 5 [ATT6] presents the results of that regression.</p> <p>One data point, 1983, has been deleted in this regression analysis. 1983 was an extremely wet year, in fact a record El Nino year. Why it appears as an outlier needs further investigation. It is possible for instance in such a year that the hydraulic gradients throughout the Delta are changed dramatically during such an event. Opening the Yolo Bypass as is done for extreme events may help explain the departure. The result shown in Figure 5 [ATT6] is unequivocal. The strong dependence on the Excess (Vernalis-Export) flows shows the importance of Vernalis flows and reduced exports if reverse flows in Old River are to be avoided. No dependence of Old River reverse flows on the magnitude of Sacramento River flows could be discovered. This result should not be surprising given the close proximity of the San Joaquin River, the export pumps, and Old River. The Vernalis flows in the San Joaquin are the first to [be] scavenged by the Export pumps and given that they are insufficient to support the level of export flows gives rise to the induced reverse flows in Old River.</p> <p>Concluding Comments: Recent studies by DWR have apparently been directed to the objective of managing salts in the South Delta by means of carefully selected barriers and salt reduction in the flows from Vernalis. As helpful as these may be it is difficult to understand how effective they can be given that there is insufficient flow entering the South Delta from Vernalis, which we have shown in the above presentation. If there is to be significant reduction in salts entering the pumps, our conclusion is that there has to be greater flows released from all the San Joaquin tributaries. This will require changes primarily in the operations at Friant, New Don Pedro, New Melones, and New Exchequer dams. Such changes will provide the most efficient way to achieve objectives in the South Delta.</p>	
1185	3	[ATT1: Figure 1. Scatterplot of total annual runoff vs. Oct.-Mar. runoff (MAF).]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1185	4	[ATT2: Figure 2. Regression result for WY total runoff vs. previous Apr.-Jul. runoff.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1185	5	[ATT3: Figure 3. Plot of monthly flows above and below Friant (cfs). (Reproduction of Figure 2-7 from South Delta Water Quality studies.)]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1185	6	[ATT4: Figure 4. Plotted comparison of Vernalis flows with tributaries, 1981-2006.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1185	7	[ATT5: Table 1. Flows into and out of the Delta plus Old-Middle River flows, 1981-2006.]	The commenter is providing this attachment for reference purposes in support of their comments. Those

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			comments are addressed in these responses to comments; therefore, no additional response is required.
1185	8	[ATT6: Figure 5. Regression line for Old River vs. Excess Flows (kcfs), 1981-2006.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	1	We [Central Valley Clean Water Association] hope to continue working with State Water Resources Control Board (State Board) staff to develop alternatives for a truly workable salinity objective in the southern Delta as it applies to publically-owned treatment works.	Please see Master Response 1.1, General Comments, for information regarding collaboration with agencies.
1186	2	Four CVCWA [Central Valley Clean Water Association] members are located within the southern Delta and are impacted by the proposed salinity objective: the City of Stockton, the City of Manteca, the City of Tracy, and Mountain House Community Services District. These POTWs [publicly-owned treatment works] and CVCWA are concerned that the current language in the Bay-Delta Plan Amendment Southern Delta Water Quality component proposing an electrical conductivity (EC) objective of 1.0 deciSiemens per meter (dS/m) [Footnote 1: Salinity is measured in the Bay-Delta Plan Amendment in EC units, which can be expressed in either deciSiemens per meter or µmhos per centimeter (1.0 dS/m = 1,000 µmhos/cm)] as a rolling 30-day average will impose costly and unnecessary burdens on POTWs without providing any measurable improvement in salinity in the southern Delta.	Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments. Please see Master Response 3.3, Southern Delta Water Quality, regarding the water quality in the southern Delta. Please see Master Response 3.6, Service Providers, and Chapter 13 regarding a discussion of POTWs and potential effects to POTWs associated with the plan amendments.
1186	3	<p>CVCWA's [Central Valley Clean Water Association's] main concern is that the proposed southern Delta salinity objective will be interpreted and/or applied as an end-of-pipe effluent limit on POTW [publicly-owned treatment works] discharges of treated wastewater. In fact, the Bay-Delta Plan Amendment contains language that implies that this objective would be imposed as an end-of-pipe limit. (Appendix K, Revised Water Quality Control Plan, p. 45-46.) Specifically, the proposed language states that POTWs whose discharges exceed the salinity water quality objective should consider desalinating their effluent, indicating that any discharger with effluent salinity greater than 1.0 dS/m would be out of compliance. (Appendix K, Revised Water Quality Control Plan, p. 46; see also SED, p. 13-72.)</p> <p>The SED also bases its impact analyses for POTWs [Footnote 2: The SED refers to impacts on POTWs as impacts on "service providers."] on the assumption that POTWs would be required to meet 1.0 dS/m as an effluent limitation. (SED, p. 13-70-13-72.) Imposing the salinity objective as an end-of-pipe effluent limit is not necessary considering the incredibly small impact POTWs have on salinity concentrations in the southern Delta, especially as compared to the extraordinary costs POTWs would bear in order to meet such an effluent limit. CVCWA proposes that compliance with the salinity objective be measured in-stream, rather than at end-of-pipe, and that other allowances be made in the program of implementation for the salinity objective that ensure POTWs can comply with the objective without requiring unnecessary treatment and its attendant unnecessary costs.</p>	Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.
1186	4	<p>CVCWA's [Central Valley Clean Water Association's] Recommended Program of Implementation Language:</p> <p>The Bay-Delta Plan Amendment and program of implementation for the proposed southern Delta salinity water quality objective should include the following provisions to ensure that POTWs [publicly-owned treatment works] are regulated in a way that is effective and not overly burdensome. CVCWA has prepared draft language for inclusion in the Bay-Delta Plan Amendments, attached hereto as Attachment 1 [ATT1].</p>	Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation. Please also see Appendix K for changes to the Program of Implementation related to POTWs.

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		<p>Calculation of Reasonable Potential:</p> <p>As identified in Attachment 1, CVCWA recommends that the Bay-Delta Plan Amendment instruct the Regional Board to conduct reasonable potential analyses (RPA) for dischargers at the historic compliance locations: San Joaquin River at Airport Way Bridge, Vernalis; San Joaquin River at Brandt Bridge; Old River near Middle River; and Old River at Tracy Road Bridge. This will ensure that available dilution will be considered, as required in 40 C.F.R. § 122.44(d)(1)(ii). CVCWA further recommends that the RPA consider whether the discharge is meaningfully or reasonably causing or contributing to an exceedance of the salinity objective, based on sampling or modeling, even if the discharge itself exceeds the objective. This would examine whether ceasing the discharge would not meaningfully impact downstream receiving water conditions.</p> <p>The Central Valley Regional Water Quality Control Board (Regional Board) should also consider whether existing controls, like agricultural barriers and Department of Water Resources’ (DWR) or the U.S. Bureau of Reclamation’s water rights, could provide assimilative capacity or dilution. Where insufficient data exists to determine reasonable potential, permits should require additional monitoring in the applicable compliance segment. This monitoring could be fulfilled through discharger participation in a regional monitoring program. In the interim, the Regional Board can consider including a performance-based effluent limitation, a salinity evaluation and minimization plan, and/or participation in a program such as CV-SALTS.</p>	
1186	5	<p>CVCWA’s [Central Valley Clean Water Association’s] Recommended Program of Implementation Language:</p> <p>The Bay-Delta Plan Amendment and program of implementation for the proposed southern Delta salinity water quality objective should include the following provisions to ensure that POTWs [publicly-owned treatment works] are regulated in a way that is effective and not overly burdensome. CVCWA has prepared draft language for inclusion in the Bay-Delta Plan Amendments, attached hereto as Attachment 1 [ATT1].</p> <p>Development of Final Water Quality-Based Effluent Limitations:</p> <p>CVCWA also recommends that water quality-based effluent limitations be based on mass-based load allocations developed through a watershed loading analysis and facility-specific water quality modeling analysis, akin to the waste load allocation (WLA) [Footnote 3: WLA is the portion of a receiving water’s loading capacity that is allocated to point sources. (40 C.F.R., § 130.2(h).)] process used with total maximum daily loads (TMDLs), as described in U.S. Environmental Protection Agency (USEPA) regulations and NPDES permit guidance. This mass-based load allocation can be developed using any reasonable allocation scheme that meets antidegradation requirements and other California water quality standards. (See USEPA, Technical Support Document for Water Quality-Based Toxics Control (1991), p. 69.)</p> <p>Therefore, a mass-based load allocation that requires no additional reduction in point-source loading beyond that achieved through minimization efforts is a reasonable finding, and a performance-based mass limit is appropriate. A watershed-scale analysis provides information to determine whether further reduction of point source loadings would result in a meaningful--or measurable--change in ambient salinity conditions. Existing facility-specific modeling analyses show that POTW salinity mass loadings do not create significant incremental changes in ambient water quality. Given this minimal impact on ambient</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation. Please also see Appendix K for changes to the Program of Implementation related to POTWs.</p>

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		<p>salinity conditions, and given the efforts that southern Delta POTWs has made to minimize discharges of salinity, it is reasonable to establish performance-based mass limits that consider and account for conservation and growth as the final water quality-based effluent limitation. NPDES permit provisions accompanying these limits may incorporate continued efforts to minimize salinity mass loadings.</p> <p>Water quality-based effluent limitations could also be calculated considering dilution, if the discharger so requests. The discharger would select between a steady-state or a dynamic modeling approach.</p> <p>NPDES permits for southern Delta POTWs may also include other provisions to ensure that mass loadings of salinity will not unreasonably increase in the future:</p> <ul style="list-style-type: none"> -Continue efforts to minimize salinity in effluent -Participation in the Salinity Management Strategy as described in the Central Valley Salt and Nutrient Management Plan (SNMP), including participation in CV-SALTS' Prioritization and Optimization Study -Support for TMDL development to address the 303(d) listing for EC in the South Delta <p>Other options for compliance include the ability for a POTW to obtain a salinity variance or time schedule order to come into compliance with any final water quality-based effluent limitation. The Bay-Delta Plan Amendments already indicate that dischargers may qualify for a variance pursuant to the Regional Board Resolution R5-2014-0074, and CVCWA requests that this provision remain in place. However, the Bay-Delta Plan Amendments should also reflect the ability for the Regional Board to grant time schedule orders for POTWs.</p> <p>[CVCWA] Staff and the State Board appear to recognize that POTWs should not be required to spend significant public resources when their collective impact is minimal. Further, Water Code sections 13241 and 13242 require that water quality objectives be set at a value "that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area." (Wat. Code, § 13241, subd. (c).) The cost of meeting salinity standards for POTWs is not reasonable.</p> <p>An additional benefit to the incorporation of these provisions is to lessen the impacts of the 1.0 dS/m salinity objective on POTWs, which were identified as significant and unavoidable in the SED for this project. Presenting other options for POTW compliance with the salinity objective would allow State Board staff to determine that the proposed 1.0 dS/m objective no longer presents a significant and unavoidable impact on POTWs.</p> <p>As presented, the Bay-Delta Plan Amendments' only compliance strategy available to POTWs to consistently achieve salinity effluent limitations is desalination through reverse osmosis processes (RO). (SED, p. 13-70.) Constructing RO facilities impacts POTWs greatly, as noted in the SED. These impacts include: (1) high costs of construction and operation; (2) challenges with brine disposal systems (including cost and transportation until a Central Valley brine line is constructed and operable); (3) increased greenhouse gas (GHG) emissions; and (4) increased energy demand to operate the facilities. Considering the very small impact POTWs have on salinity in the southern Delta, the costs of RO are not justified or reasonable. (See Wat. Code, § 13241.) CVCWA's recommended changes to the Bay-Delta Plan Amendment language will help ensure that limits on POTWs based on water quality</p>	

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		<p>objectives are properly justified, considering all required factors in a Water Code section 13241 analysis.</p>	
1186	6	<p>POTWs [publicly-owned treatment works] have a de minimis impact on salinity in the Delta. CVCWA [Central Valley Clean Water Association] concurs with the Bay-Delta Plan Amendment in its statement that "Overall, the WWTPs [wastewater treatment plants] have only a small effect on southern Delta salinity." (SED, p. 13-23.) The de minimis impact of POTWs on salinity levels in the southern Delta is also acknowledged in the Bay-Delta Plan Amendment through its presentation of conclusions drawn from a DWR modeling study of NPDES discharges performed in 2007 to better understand the salinity impacts of new and expanded discharges from Tracy and Mountain House.</p> <p>The modeling study "concluded that the Tracy discharge under reasonable worst-case conditions has limited impacts on the salinity problem in the southern Delta as compared to other sources of salinity in the area defined as ambient salinity entering from the San Joaquin River, agricultural activities, and groundwater accretions." (Appendix C, Technical Report of the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, p. 4-10)</p> <p>Furthermore, in a February 2012 mass balance analysis performed by the State Board comparing the maximum permitted salinity loads from the point source discharges of Tracy, Mountain House, and Deuel Vocational Facility to salinity loading entering the Head of Old River, the State Board found "that the salt load from point sources in this part of the southern Delta is a small percentage of the salt load entering from upstream." (Appendix C, Technical Report of the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, p. 4-11) CVCWA has performed an analysis similar to the far-field water quality impact analyses conducted for southern Delta POTWs in support of the Central Valley Water Board's Staff Report for Policies for Variances from Surface Water Quality Standards for Point Source Dischargers, Variance Program for Salinity, and Exception from Implementation of Water Quality Objectives for Salinity (CVRWQCB, 2014) (Variance Policy).</p> <p>The Staff Report for the Variance Policy and its supporting technical memorandum are attached as Attachment 2 [ATT12] and Attachment 3 [ATT13], respectively. DWR's Delta Simulation Model 2 (DSM2) results (DWR, 2007) were used with current EC effluent data for the Tracy Wastewater Treatment Plant (WWTP) and Mountain House WWTP to estimate water quality changes in downstream receiving water quality with and without the implementation of RO. CVCWA's analysis uses DWR DSM2 model results to estimate the percent change in ambient EC levels at downstream salinity compliance locations (see Figure 1 [ATT2]) with Tracy and Mountain House discharging at their current permitted capacities, with and without RO treatment.</p> <p>The DWR DSM2 Model considers both low and high export pumping from the southern Delta and the timing of installation of agricultural barriers (August) and the Head of Old River fish control structure (October). CVCWA's analysis considers both low- and high-export pumping, but focuses on October flow conditions when the volume fraction of POTW effluent is greatest in the southern Delta. The incremental, far-field water quality changes presented in Table 1 [ATT3] and Table 2 [ATT4] demonstrate a de minimis influence of POTW discharges on downstream ambient EC levels at the nearest modeling location (Old River at Tracy Road Bridge), and no change (0.00%) in ambient EC concentrations at the two modeling locations farther downstream (Middle River at Mowry Bridge and San Joaquin</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation. The information provided by the commenter regarding the de minimis effect of POTW discharges on southern Delta salinity has been considered in connection with the revisions to the Program of Implementation.</p>

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		<p>River at Brandt Bridge).</p> <p>In the case of the Tracy discharge (see Table 1 [ATT3]), the low Delta export scenario shows a slightly greater estimated percent change in ambient EC (0.98%) at the Old River at Tracy Road Bridge modeling location, as compared to the high Delta export scenario (0.04%). Modeling shows no percentage difference in ambient EC levels is observed between the low- and high-Delta export scenarios developed for the Mountain House WWTP (see Table 2 [ATT4]).</p> <p>The estimated percent change in ambient EC levels downstream of the Tracy WWTP under a future scenario "with RO" (where the discharger implements RO to meet the proposed 1.0 dS/m EC objective), in comparison to ambient EC levels estimated to occur downstream of the discharge "without RO" is shown in Figure 2 [ATT5]. A similar plot of future estimated downstream EC levels "with RO" and "without RO" is shown for the Mountain House WWTP in Figure 3 [ATT6]. Both figures illustrate the extremely small differences in estimated ambient EC levels downstream of each discharge for a discharge scenario that includes RO treatment.</p>	
1186	7	[ATT2: Figure 1: Southern Delta Area Showing Tracy, Mountain House, and Manteca Discharge Locations in Relation to Far-Field Modeling Locations and Proposed Southern Delta Compliance Segments.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	8	[ATT3: Table 1: Summary of DWR DSM2-Modeled, Incremental, Far-Field Water Quality Changes During the Month of October with Implementation of Partial Reverse Osmosis Treatment at the Tracy WWTP and the Granting of a Salinity Variance.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	9	[ATT4: Table 2: Summary of DWR DSM2-Modeled, Incremental, Far-Field Water Quality Changes During the Month of October with Implementation of Partial Reverse Osmosis Treatment at the Mountain House CSD WWTP and the Granting of a Salinity Variance.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	10	[ATT5: Figure 2: City of Tracy WWPT Future Incremental Far-Field Water Quality Changes Associated with Implementation of RO Treatment Under Low Delta Export Conditions During the Month of October (Based on DWR DSM2 Modeling).]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	11	[ATT6: Figure 3: Mountain House CSD WWTP Future Incremental Far-Field Water Quality Changes Associated with Implementation of RO Treatment Under Low Delta Export Conditions During the Month of October (Based on DWR DSM2 Modeling).]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	12	<p>Compliance strategies in SED will not significantly reduce salinity in the Delta. The SED suggests that POTWs [publicly-owned treatment works] have a small number of compliance options which should be implemented as a means to meet a proposed southern Delta salinity water quality objective. The suggested compliance actions include: (1) new source water supplies, (2) salinity pretreatment programs, and (3) desalination (RO). The cities of Tracy, Stockton, and Manteca have all made substantial investments in obtaining significant new source water supplies, implementing salinity source control programs/pretreatment programs, and implementing salinity source control requirements in their existing NPDES permits.</p> <p>These actions have resulted in improvements in EC effluent quality for each discharger; especially, when comparing current EC quality to that measured in the early 2000s. Further improvements are not anticipated, since the actions have already been taken. In the cases</p>	Please see Master Response 3.6, Service Providers, for responses to comments regarding salinity reduction options available for POTWs.

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		<p>of Tracy and Stockton, it should be noted that new source water supplies and salinity control programs have not resulted in the production of a treated effluent that could meet a 1.0 dS/m EC effluent limitation.</p> <p>Figure 4 [ATT7] shows EC levels in Tracy WWTP effluent decreasing over time from a peak in 2006 when Tracy obtained a new surface water supply. However, the plot also shows EC levels increasing before and during the recent drought. Annual average EC levels have exceeded 1.2 dS/m for most of the past four years. A similar pattern is observed for the Stockton RWCF as shown in Figure 5 [ATT8]. As Stockton has obtained new surface water supplies, annual average EC levels in its effluent have decreased, with the exception of a noticeable drought-related increase in EC observed in 2015. Stockton would not be able to meet a 1.0 dS/m EC objective.</p> <p>Manteca obtained a new surface water supply in 2005 that resulted in a significant reduction in the EC of its effluent for several years. However, as shown in Figure 6 [ATT9], annual average EC levels in Manteca’s effluent have slowly increased since 2010. Although Manteca could presently meet a 1.0 dS/m EC objective, it is uncertain if it could do so in the future based on the upward trend in EC levels that has been observed during the recent drought.</p> <p>Southern Delta POTWs have already undertaken numerous salinity minimization activities. The main source control mechanism used by southern Delta POTWs has been the acquisition of new surface water supplies, which has reduced the salt entering the municipal water supply. This, in turn, results in lower-salinity effluent discharges into the southern Delta. Other salinity minimization activities include continued implementation of industrial source control and pretreatment programs that regulate and control salt discharges from industrial users to sanitary sewer systems, as well as outreach and education efforts for residential dischargers regarding the impacts of salt-producing products and practices, such as detergents and other household cleaners, salt-based water softeners, and food processing habits.</p> <p>Together, these activities have helped reduce salinity in POTW discharges to the southern Delta. CVCWA [Central Valley Clean Water Association] is not opposed to including these compliance mechanisms as options in the Bay-Delta Plan Amendments, but would like recognition that these activities have already been undertaken and that there is little room for improvement beyond current levels through the use of these activities alone.</p>	
1186	13	[ATT7: Figure 4: City of Tracy WWTP Annual Average Effluent EC: 2006-2016.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	14	[ATT8: Figure 5: City of Stockton RWCF Annual Average Effluent EC: 2002-2016.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	15	[ATT9: Figure 6: City of Manteca WQCF Annual Average Effluent EC: 2004-2016.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	16	Desalination imposes high economic and environmental costs on POTWs [publicly-owned treatment works]. Each of the three cities [Tracy, Manteca, and Stockton] has expended significant resources to improve the quality of their source water supplies over the past two decades, in addition to the costs of implementing salinity control programs. The investments made in new source water supplies by each of the three cities includes: \$80	Please see Master Response 3.6, Service Providers, for responses to comments regarding salinity reduction options available for POTWs. The environmental and economic costs related to reverse-osmosis treatment of effluent have been considered in connection with revisions to the Program of Implementation.

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		<p>million for Tracy, \$221 million for the City of Stockton, and \$43 million for Manteca. The ability to continue to improve source water supplies is limited because surface water supplies are becoming less available, and are likely to become more scarce and expensive as proposed flow restrictions included in this very Bay-Delta Plan Amendment adversely impact the availability of this less saline water.</p> <p>As surface water volumes become less reliable during times of drought, cities often turn to increased groundwater pumping to make up for losses in surface water supplies. The use of groundwater increases effluent salinity due to the higher salt concentrations present in their local Central Valley groundwater basins. Additionally, further improvement in the implementation of existing industrial and residential salinity source controls is not expected to result in a significant lowering of EC in municipal effluent.</p> <p>The SED’s recommendation for desalination of municipal wastewater remains an untried option for Central Valley POTWs, but the implementation of such an action would certainly result in increased energy consumption, increased GHG emissions, new costs and challenges associated with brine disposal, increased costs to ratepayers, and local socioeconomic impacts resulting from increased economic burdens to ratepayers. Furthermore, as shown in Figure 2 [ATT5] and Figure 3 [ATT6], the implementation of RO treatment for Tracy and Mountain House would impart no measurable water quality benefit in the receiving water. It is expected that the same holds true for Manteca, as well.</p> <p>Planning-level estimates of the capital and operations and maintenance (O&M) costs associated with implementation of RO treatment to meet a proposed 1.0 dS/m EC objective for the cities of Tracy, Stockton, and Mountain House are provided in Table 3 [ATT10]. The total capital cost alone for these cities exceeds \$157 million. The costs shown would be in addition to existing annual O&M costs for each treatment facility and annual expenditures for the supply and treatment of source water and existing source control activities.</p> <p>The operation of RO treatment systems would also significantly increase the energy demand for each facility, requiring potentially greater power distribution system capacity, backup power generating capacity, and/or power grid connection capacity. (West Yost Associates, 2011.) [Footnote 4: The cost of expanding local/regional electricity infrastructure due to increased energy demand from a wastewater treatment plant is not considered in the RO treatment cost estimates provided in Table 3, because the cost of infrastructure expansion would typically be assumed by the power provider and offset by utility rate increases.] RO is an energy-intensive process, as noted in the SED. (SED, p. 16-273.) This increased energy demand would result in a subsequent expansion of GHG emissions and the carbon footprint of each facility.</p> <p>Although not discussed in detail in the SED, the SED acknowledges that operation of RO facilities could have significant and unavoidable environmental impacts. (SED, p. 16-273.) A summary of the potential increased carbon footprint associated with the operation of RO treatment systems is included in Table 4 [ATT11]. The GHG emission estimates provided in Table 4 are in addition to those emissions currently generated by each facility.</p> <p>Brine disposal alternatives include crystallization and land disposal, evaporation/containment ponds, piping or trucking liquid brine for offsite disposal, or deep-well injection. For communities in the Central Valley, which are located significant distances from the ocean or other suitable disposal sites, liquid brine transport is not cost-effective. The volumes of brine generated at the community level are also problematic for deep-well</p>	

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		injection. The most viable alternatives are crystallization and disposal (a high-energy process) and use of evaporation/containment ponds (a land-intensive option), each of which represent costly options with an irretrievable commitment of resources. The RO treatment costs provided in Table 3 [ATT10] include the cost of thermal brine concentration, crystallization, and land disposal.	
1186	17	[ATT10: Table 3: Planning Level Cost Estimates for Reverse Osmosis (RO) Treatment.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	18	[ATT11: Table 4: Additional Greenhouse Gas Emissions Associated with the Operation of RO Treatment Systems.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	19	<p>The SED contains insufficient analysis of the salinity objective alternatives proposed, including the significant and unavoidable impacts to POTWs [publicly-owned treatment works] and the selection of the environmentally superior alternative. CEQA requires that lead agencies analyze "a range of reasonable alternatives to the project . . . which could feasibly attain the basic objectives of the project, and evaluate the comparative merits of the alternatives." (Cal. Code Regs., tit. 14, § 15126, subd. (d).) CEQA further provides that lead agencies "should not approve projects as proposed if there are feasible alternatives . . . available which would substantially lessen the significant environmental effects of such projects." (Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553, 565.)</p> <p>The SED includes inadequate analysis of the environmental impacts of the proposed salinity objective and the other alternatives. Specifically, the analysis of impacts on POTWs in Chapter 13 of the SED fails to consider the interaction of proposed compliance strategies with the Lower San Joaquin River (LSJR) flow objectives proposed for adoption alongside the salinity objectives. Chapter 13 also considers only a few means of POTW compliance with the salinity objectives, when other possible means of compliance exist. These analyses also assume that the salinity objective would be imposed as an end-of-pipe effluent limit, which is neither appropriate nor necessary, as CVCWA [Central Valley Clean Water Association] has explained. Finally, the analysis selecting the 1.0 dS/m salinity objective as the environmentally superior alternative is not supported by evidence or logic, when considered with impact findings made in the rest of the SED.</p>	Please see responses to Comments 1186-20 through 1186-24. Please also see Master Response 2.1, Water Quality Control Plan Amendments, for a discussion of SDWQ Alternative 2 compared to SDWQ Alternative 3.
1186	20	<p>Alternatives considered do not include an annual average EC alternative. The SED proposes three alternatives for the salinity objective: a no-project alternative (arguably status quo), southern Delta objective alternative 2 with a rolling 30-day average EC objective of 1.0 dS/m, and southern Delta objective alternative 3 with a rolling 30-day average EC objective of 1.4 dS/m. (SED, pp. 3-38, 3-40.) None of these alternatives consider an annual average EC objective, which could reduce impacts on POTWs [publicly-owned treatment works] due to the fluctuations in effluent EC on a 30-day basis. Although the SED states that periods longer than 30 days may affect agricultural beneficial uses, the SED does not adequately analyze longer periods, including an annual average.</p> <p>Failing to consider a longer averaging period, especially an annual average alternative, does not fully inform decision makers and the public about the relative impacts of each alternative. It is likely that a longer averaging period will reduce the severity of impacts on POTWs. It is unclear from the sparse discussion in the SED whether an annual average at the 1.0 dS/m or 1.4 dS/m EC objectives would adversely impact agricultural uses. A blanket statement that the crops do not "see" the average salinity is not enough to justify the</p>	<p>As discussed in Chapter 3, Alternative Description, averaging periods longer than 30 days were not considered for the SDWQ alternatives because measuring compliance with a salinity standard as an annual average could miss impacts on agriculture. Averaging salinity over long periods will combine the many high and low salinity values into a single intermediate number, which could help POTWs comply with the salinity standard, but could also hide relatively short term, high salinity conditions. Crop water uptake occurs on a shorter timespan than annually and prolonged exposure to high salinity conditions during water uptake could impact the crops, especially during sensitive growing stages such as emergence and seedling development.</p> <p>Please see Master Response 2.4, Alternatives to the Water Quality Control Plan, for discussion of the Alternatives analyzed. Please see Master Response 3.6, Service Providers, for discussion of how service providers can comply with the southern Delta salinity objectives. Please see Master Response 3.3, Southern Delta Water Quality, and appendix E, Salt Tolerance of Crops in the Southern Sacramento - San Joaquin Delta, for discussion of why the southern Delta water quality objectives are being updated. As stated in Chapter 11, Section 11.4.2, Methods and Approach, SDWQ Alternatives, the year -round irrigation salinity concentrations are based on the findings in Appendix E Salt Tolerance of Crops in the Southern Sacramento-</p>

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		<p>elimination of this possible alternative. (SED, p. 3-37.) This is especially true when the analysis of the southern Delta objective alternatives' impacts on agricultural uses came to their significance conclusions based on "assuming year-round irrigation salinity concentrations of 1.0 dS/m and 1.4 dS/m. . . ." (SED, p. 11-56.)</p> <p>More analysis should be done to demonstrate how a longer averaging period would affect both POTWs and agricultural uses. It is likely that a longer averaging period would reduce the impacts on POTWs, so it should be thoroughly analyzed to see if there would actually be an adverse impact on agricultural beneficial uses, based on consideration of crop life stage and the requirement that and EC of 0.7 dS/m be maintained at Vernalis through part of the year.</p>	<p>San Joaquin Delta. Appendix E uses a rolling 30-day average to establish salinity values. In other words, a rolling 30-day average was used over a year. The quoted language has been revised in Chapter 11 to eliminate the confusion.</p>
1186	21	<p>Impacts to POTWs [publicly-owned treatment works] are inadequately analyzed and do not contain other feasible alternatives. The SED contains flawed analyses in its discussion of the impacts of the southern Delta objective alternatives on POTWs. These flaws are rooted in the SED's consideration of only limited alternatives that do not include a workable program of implementation that would address POTW compliance with the selected salinity objective.</p> <p>Effect of Surface Water Supplies on Effluent Salinity: The SED fails to fully analyze and disclose the impacts of the LSJR flow objectives on the ability of POTWs to comply with the southern Delta salinity objectives. Specifically, the SED suggests that municipalities obtain more surface water supplies and reduce the amount of water supply sourced from groundwater, because groundwater tends to be higher in salinity than surface water. (SED, p. 4-16.) However, the SED does not mention that the LSJR flow objectives may frustrate municipalities' ability to maintain the current level of surface water supply, and may prevent municipalities from obtaining additional surface water supply in the future.</p> <p>These impacts are of particular concern to Manteca and Tracy, who source their surface water supplies from the Stanislaus River via South San Joaquin Irrigation District (SSJID). Without these surface water supplies, these cities would otherwise be largely groundwater-dependent. The same would be true for Stockton, as its only other surface water supply source is from the Stockton East Water District (SEWD), which obtains a limited amount of water from the New Hogan Reservoir and the highly variable Central Valley Project contract from the New Melones Reservoir.</p> <p>The SED acknowledges that the LSJR flow objective may cause POTWs to source water from groundwater, but does not mention that the reduced availability of LSJR surface water for municipalities can impact the amount of EC discharged by POTWs in these communities. As seen in the above graphs charting effluent salinity over time, increasing the amount of groundwater in a municipality's water supply can lead to elevated EC in POTW effluent. (See Figures 5-7, [ATT8, ATT9; no fig. 7.] Salinity in effluent decreased in the mid-2000s as cities obtained lower salinity surface water supplies, reducing their reliance on high-salinity groundwater. (See Figures 5-7.)</p> <p>The LSJR flow objectives can impact the amount of salt entering an urban water supply system and also the amount of salt exiting the system through POTW discharges. Accordingly, this impact on POTWs should be discussed and the recommendation that southern Delta POTWs develop additional surface water supplies should mention the impact that the LSJR flow objectives may have on additional surface water availability.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding salinity reduction options available for POTWs.</p>

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1186	22	<p>Desalination is not the only way POTWs [publicly-owned treatment works] can comply with salinity objectives. The SED finds that the proposed alternative-- southern Delta objective alternative 2, for a 30-day rolling average EC objective of 1.0 dS/m--presents significant and unavoidable impacts on POTWs primarily because the SED considers desalination, specifically RO, as the only way POTWs can reduce EC in their effluent to meet the objective. (SED, p. 13-70.) CVCWA [Central Valley Clean Water Association] disagrees that imposing the salinity objective as an end-of-pipe effluent limit is necessary to ensure that the proposed objective is met at the three compliance locations specified in the Bay-Delta Plan amendment. This is because of the very small impact POTW discharges have on salinity in the southern Delta and the lack of significant reductions in ambient salinity even if POTWs were to construct expensive RO facilities. (See Tables 1-2 [ATT3, ATT4] and Figures 3-4 [ATT6, ATT7].)</p> <p>The costs of constructing and operating RO facilities have already been analyzed and presented to the State Board in connection with the Salinity Variance Policy. Adjusting these numbers for the proposed 1.0 dS/m EC objective shows that capital required to construct an RO facility would cost:</p> <ul style="list-style-type: none"> -Over \$93 million for Stockton, assuming that 14.8 million gallons per day [mgd] must be treated to meet the 1.0 dS/m objective; -Over \$52 million for Tracy, assuming 8.3 mgd must be treated to meet the salinity objective; and -About \$12 million for Mountain House, assuming 1.9 mgd must be treated to meet the salinity objective. [Footnote 5: A calculation of the capital cost for Manteca to construct RO has not been conducted at this time, because under current conditions, Manteca discharges effluent with EC levels below the proposed 1.0 dS/m objective. (See SED, p. 13-24.) This could change, however, based on any additional groundwater Manteca may be required to use to supplement lost supply from SSJID.] <p>On top of these capital outlays, annual operations and maintenance costs would range from \$1.2 million for Mountain House to \$9.2 million for Stockton. (Table 3 [ATT10].) It is unnecessary for POTWs to take on such immense expenses when the proposed salinity objective can be implemented in a way that ensures that the objective is met at the compliance locations while not requiring that end-of-pipe effluent limits in NPDES permits match the 1.0 dS/m EC objective.</p> <p>The State Board should adopt a program of implementation that establishes that the 1.0 dS/m objective should not be imposed as an end-of-pipe effluent limit in POTW NPDES permits. This would remove the need for POTWs to construct and operate RO facilities to comply with the proposed salinity objective. The SED should refine its analysis of the impacts of southern Delta objective alternative 2 on POTWs accordingly, since the additional compliance strategies presented in the program of implementation may lead to a conclusion that this alternative will not have a significant and unavoidable impact.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding the salinity reduction options available for POTWs and regarding revisions to the Program of Implementation. The cost information has been considered in connection with revisions to the Program of Implementation.</p>
1186	23	<p>Analyses of other indirect and additional actions required by the Bay-Delta Plan Amendment should be redone to accommodate a workable program of implementation for POTWs [publicly-owned treatment works]. The SED proposes that the Regional Board would establish effluent limits to ensure that POTWs comply with the 1.0 dS/m EC limit, stating that "[POTWs] with discharges that have a reasonable potential to cause or contribute to an</p>	<p>Please refer to Master Response 3.6, Service Providers, regarding application of the salinity objectives to POTWs, revisions to the Program of Implementation, and the ability to obtain additional surface water supplies.</p>

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		<p>excursion above the numeric objective would have effluent limitations in their NPDES permits to meet the revised objective." (SED, p. 16-215.)</p> <p>CVCWA [Central Valley Clean Water Association] suggests that this section be revised to reflect CVCWA's proposed changes, particularly its recommended language for the program of implementation, that would otherwise address the need for the Regional Board to impose a 1.0 dS/m effluent limit on POTWs. The program of implementation should contain a method of calculating reasonable potential that takes into account the limited POTW impact on salinity in the southern Delta and the fact that compliance is properly measured in-stream rather than at the end-of-pipe. CVCWA's recommended language contains provisions that would achieve this goal. (Attachment 1 [ATT1].)</p> <p>Additionally, the SED analyzes the potential expansion of surface water intake facilities if municipalities increase their surface water supplies, as proposed in the Bay-Delta Plan amendment. (SED, pp. 16-216-16-217.) This analysis should reflect that additional surface water supplies may be difficult for municipalities to obtain at current or greater levels, given the impacts that the LSJR flow objectives may have on surface water allocations to SSJID, SEWD, and other water suppliers. Finally, to the extent that CVCWA's suggested alternative compliance strategies would require other indirect actions by POTWs, this section should be revised to include an impact analysis of any such actions.</p>	
1186	24	<p>The analysis selecting the environmentally superior alternative is deficient, but CVCWA's [Central Valley Clean Water Association's] suggestions may address these deficiencies. The SED concludes that southern Delta objective alternative 2 is the environmentally superior alternative. (SED, p. 18-33.) This alternative was selected after comparing the impacts of a no-project alternative, southern Delta objective alternative 2, and southern Delta objective alternative 3. (SED, p. 18-32.) CEQA requires that when "the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." (Cal. Code Regs., tit. 14, § 15152.6, subd. (e)(2).)</p> <p>As the SED states, this involves evaluating which alternative would result in the fewest significant impacts, yet still achieve project objectives. (SED, p. 18-32.) However, the SED selects alternative 2 as the environmentally superior alternative, which will result in significant and unavoidable impacts (on POTWs [publicly-owned treatment works]), while alternative 3 will not result in any significant and unavoidable impacts. (SED, 18-32.)</p> <p>The SED attempts to massage its preferred alternative into the environmentally superior alternative by essentially re-evaluating the impacts of the 1.4 dS/m objective proposed in alternative 3. This creates analysis that is inconsistent with the rest of the SED. Specifically, the SED's evaluation of the southern Delta objective alternatives' impacts on agricultural uses found that there would be a less-than-significant impact on agricultural uses under both alternatives 2 and 3. (SED, pp. 11-56-11-57.) It also concludes that neither alternative is likely to affect historical salinity levels in the southern Delta. (SED, p. 11-56.)</p> <p>Even in evaluating the slightly higher salinity level in alternative 3, the SED finds that the most salt-sensitive crop grown in the southern Delta, dry beans, would not suffer yield losses greater than 10 percent, which is below the significance threshold identified in the SED. (SED, p. 11-57.) Thus, the SED concludes that alternative 3 would not have a significant impact on agriculture in the southern Delta. (SED, p. 11-57.) Despite this, the SED inexplicably concludes that alternative 3 would not meet the project goal of reasonably</p>	<p>Please see Master Response 2.1, Amendments to Water Quality Control Plan, for discussion on the justification for SDWQ Alternative 2. Chapter 18 has been modified to clarify the discussion comparing SDWQ Alternatives, as well as to reflect changes to program of implementation related to POTWs. Also, please see Master Response 3.6, Service Providers, for responses to comments regarding potential impacts on service providers and regarding revisions to the Program of Implementation.</p>

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		<p>protecting agricultural uses, and could not be the environmentally superior alternative. (SED, p. 18-33.) This analysis is inconsistent with the earlier conclusion that alternative 3 would not have a significant impact on agricultural uses.</p> <p>An even more concerning example of this re-evaluation of alternative 3 is in the SED's discussion of the significant impacts that alternative 2 will have on POTWs. The SED first correctly states that alternative 3 "would be considered the environmentally superior alternative because it has fewer significant and unavoidable impacts." (SED, p. 18-32.) Then, it begins to erode the conclusion reached in Chapter 13 that alternative 2 would have significant and unavoidable impacts on POTWs, but alternative 3 would not. The SED now states that "significant and unavoidable impacts could still occur under alternative 3 because of the program of implementation and the potential for agricultural return flow salinity control or low lift pumping stations." (SED, p. 18-32.)</p> <p>The SED continues and provides that because "the potential combination of methods of compliance under the southern Delta objective alternatives is unknown, so is the scope, magnitude and location of the significant and unavoidable impacts." (SED, p. 18-32.) This makes no sense. If alternative 3 truly has the potential to result in significant and unavoidable consequences to POTWs, then the discussion and analysis in Chapter 13 should reflect this. It seems difficult to come to such a conclusion, when the SED is premised on POTWs needing to implement RO to reach the objective proposed in alternative 2, which is unnecessary for them to do under alternative 3. Additionally, the uncertainty that the SED brings forward about alternative 3's impacts in this chapter should have been raised and discussed in Chapters 13 and 16, where the impacts of alternative 3 on POTWs were analyzed.</p> <p>CVCWA's suggestions, namely ensuring that the program of implementation and Bay-Delta Plan Amendments provide manageable means for POTW compliance with the proposed salinity objective, could result in a finding in Chapter 13 that alternative 2, the State Board's preferred alternative, would have less-than-significant impacts on POTWs. Everything else being the same, this would put alternatives 2 and 3 on equal footing in terms of neither having significant and unavoidable impacts, and might better allow the State Board to find that alternative 2 is the environmentally superior alternative.</p>	
1186	25	<p>CVCWA's [Central Valley Clean Water Association's] suggestions will help the State Board fulfill its obligations under the City of Tracy decision. The last time the Bay-Delta Plan was amended, the City of Tracy filed a lawsuit, in which CVCWA intervened, challenging the State Board's and Regional Board's (collectively, Water Boards) attempt to impose salinity water quality objectives on POTWs [publicly-owned treatment works] in the southern Delta without complying with Water Code sections 13241 and 13242. (City of Tracy v. California State Water Resources Control Board, Sacramento Super. Ct., Case No. 34-2009-80000392.)</p> <p>On June 1, 2011, the Sacramento Superior Court issued a peremptory writ of mandate requiring the Water Boards to: (1) properly conduct the analysis required in Water Code section 13241; (2) reconsider the salinity objectives taking into consideration the factors listed in Water Code section 13241; and (3) adopt an adequate program of implementation for POTWs to achieve the salinity objectives, including recommendations for appropriate actions to be taken, a reasonable time schedule for those actions to be taken, and a description of the monitoring requirements needed to determine compliance. The outcome of the Tracy litigation shows that compliance with Water Code sections 13241 and 13242</p>	<p>The State Water Board acknowledges the CVCWA's offer to assist the State Water Board and is aware of the peremptory writ of mandate and is complying with it through the plan amendments and the SED. No further response is required.</p>

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		<p>must be complied with before the Bay-Delta Plan Amendments can be enforced against southern Delta POTWs.</p> <p>Since this writ was issued in 2011, a final return on the writ has not yet been filed. Because the Bay Delta Plan Amendments are a part of the Water Board’s compliance with the writ, CVCWA believes that its proposed language will assist the Water Boards in complying with the writ of mandate and Water Code sections 13241 and 13242. CVCWA is willing to provide further assistance to State Board staff in this regard.</p>	
1186	26	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>v. DWR’s and USBR’s water rights shall be conditioned to require continued operations of the agricultural barriers at Grant Line Canal, Middle River, and Old River at Tracy, or other reasonable measures, to address the impacts of SWP and CVP export operations on water levels and flow conditions that might affect southern Delta salinity conditions, including the assimilative capacity for local sources of salinity in the southern Delta. The water right conditions shall require any necessary modifications to the design and operations of the barriers or other measures as determined by the COP.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>
1186	27	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>vi. In addition to the above requirements, the salinity water quality objective for the southern Delta will be implemented through the Lower San Joaquin River flow objectives, which will increase inflow of low salinity water into the southern Delta during February through June and thereafter under adaptive implementation to prevent adverse effects to fisheries. This These implementation measures will assist in achieving the southern Delta water quality objective.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>
1186	28	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>vii. The Central Valley Regional Water Board shall regulate impose discharge controls on in-Delta discharges of salts by agricultural, domestic, and municipal dischargers consistent with applicable state and federal law, including, but not limited to, establishing water-quality based effluent limitations and compliance, monitoring and reporting requirements as part of the reissuance of National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act and the regulations thereunder. Publicly-owned treatment works (POTWs) regulated by NPDES permits that discharge salinity constituents above water quality objectives for EC may qualify for a variance of up to ten years pursuant to the Central Valley Regional Water Board Resolution R5-2014-0074. Actions by POTWs to comply with water quality objectives for EC include, without limitation, source control, such as reducing salinity concentrations in source water supplies; pretreatment programs, such as reducing water softener use among water users; and desalination.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>
1186	29	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>viii. Determining Reasonable Potential To Cause Or Contribute To An Exceedance Of The</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>

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		<p>Southern Delta Salinity Water Quality Objective (Reasonable Potential Analysis): Federal regulations at 40 C.F.R. 122.44(d)(1)(ii) require that, "When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent . . . , and where appropriate, the dilution of the effluent in the receiving water." To account for the factors identified in 40 C.F.R. 122.44(d)(1)(ii), such as existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and the dilution of the effluent in the receiving water, the Central Valley Regional Water Board shall consider the following factors when conducting the Reasonable Potential Analysis for salinity:</p> <p>(a) Compliance Locations for Reasonable Potential Analysis: When evaluating whether a discharge by a Publicly-owned treatment works (POTW) regulated by an NPDES permit has the reasonable potential to cause or contribute to an in-stream excursion of the southern Delta EC objectives, the Central Valley Regional Water Board shall consider available dilution of the effluent in the receiving water, as determined at the following compliance location closest to the point of discharge: San Joaquin River at Airport Way Bridge, Vernalis; San Joaquin River at Brandt Bridge; Old River near Middle River; and Old River at Tracy Road Bridge.</p> <p>(b) Controllable Factors Policy: Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or Regional Water Board, and that may be reasonably controlled. Where the salinity of a facility's discharge exceeds the southern Delta salinity water quality objective, but sampling and/or modeling demonstrate that the facility's discharge will not cause any meaningful change or degradation of the receiving water (i.e., downstream salinity is determined by upstream conditions), the facility is not meaningfully or 'reasonably' causing or contributing to an exceedance of the southern Delta salinity water quality objective. In these cases, where the cause of the exceedance is due to uncontrollable factors, the cessation of the facility's discharge would not meaningfully impact downstream receiving water conditions. Consequently, the discharge would not have reasonable potential to cause or contribute to an exceedance of the southern Delta salinity water quality objective, and water quality-based effluent limitations are not required.</p> <p>(c) Consideration of Dilution and Assimilative Capacity: When conducting the Reasonable Potential Analysis, federal regulations allow procedures that account for existing controls on point and nonpoint sources of pollution and that consider dilution of the effluent in the receiving water. DWR's and USBR's water rights are existing controls that provide sufficient flow (i.e., through the Lower San Joaquin River flow objectives) and other measures (e.g., southern Delta agricultural barrier program) to provide dilution and assimilative capacity for local sources of salinity in the southern Delta. When conducting the Reasonable Potential Analysis for NPDES permitted dischargers within the southern Delta, the Central Valley Regional Water Board shall consider these existing controls and dilution by allowing for use of assimilative capacity on an annual average basis.</p>	

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		<p>(d) Insufficient Data/Information to Conduct a Reasonable Potential Analysis: Data may be unavailable or insufficient for the Central Valley Regional Water Board to conduct the Reasonable Potential Analysis. If data are unavailable or insufficient to conduct the Reasonable Potential Analysis, the Central Valley Regional Water Board shall require additional monitoring at the applicable compliance location in place of a water-quality based effluent limitation. The discharger may satisfy the additional monitoring requirement through participation in a regional monitoring program. In addition, to ensure salinity discharge is minimized, the Central Valley Regional Water Board shall consider including (1) a performance-based effluent limitation derived in accordance with section IV.B.1.ix.b; (2) a salinity evaluation and minimization plan; (3) participation in the Central Valley Regional Water Board's Salinity Management Strategy for the 2017 Central Valley Salinity and Nitrate Management Plan (SNMP) or a similar program as described in subsection IV.B.1.x.f below.</p>	
1186	30	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>ix. Derivation of Effluent Limitations:</p> <p>(a) Water Quality-based Effluent Limitations When Reasonable Potential Exists:</p> <ol style="list-style-type: none"> 1. After considering the factors in section IV.B.1.viii, where a discharge is found to have reasonable potential to cause or contribute to an in-stream exceedance of the southern Delta salinity objectives, a water quality-based effluent limitation is required. 2. Unless otherwise requested by the discharger, the Central Valley Regional Water Board shall calculate a final water quality-based effluent limitation by calculating a mass-based load allocation, using a watershed loading analysis consistent with methods for developing a Wasteload Allocation in the USEPA Technical Support Document for Water Quality-Based Toxics Control (1991) (USEPA TSD), and use the mass-based load allocation as the final water quality-based effluent limitation. 3. At the request of the discharger, the Central Valley Regional Water Board may calculate a final water quality-based effluent limitation by using a steady state model to determine critical ambient conditions as an annual average concentration at compliance locations specified in IV.B.1.viii.a to calculate and apply appropriate dilution factors determined through DWR DSM2 or equivalent modeling; or by using a dynamic model following procedures described in the USEPA TSD to calculate dilution credits. <p>(b) Performance-based Effluent Limitations: If the Central Valley Regional Water Board determines that a performance-based effluent limitation is necessary because there is insufficient data to conduct a Reasonable Potential Analysis, or because a facility is unable to achieve immediate compliance with a final water quality-based effluent limitation derived in accordance with IV.B.1.ix.a, the performance-based effluent limitation shall be a mass-based limit calculated as an annual average and shall account for water conservation during drought and growth in the service area.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>
1186	31	<p>[From ATT1:] To be inserted in the Revised Water Quality Control Plan, contained in Appendix K to the SED, after section VI.B.1.v, and replacing sections IV.B.1.vi-vii:</p> <p>x. Compliance with Water Quality-Based Effluent Limitations: When a POTW regulated by an NPDES permit cannot comply with final water quality-based effluent limitations related to</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs and regarding revisions to the Program of Implementation.</p>

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		<p>southern Delta salinity objectives calculated in compliance with section IV.B.1.ix.a, the Central Valley Regional Water Board may use the following options:</p> <p>(a) Issue a variance pursuant to the Central Valley Regional Water Board Resolution R5-2014-0074, or pursuant to any subsequent salinity variance adopted by the Central Valley Regional Water Board;</p> <p>(b) Adopt a narrative or best management practice-based effluent limitation;</p> <p>(c) Issue an in-permit compliance schedule for a period of up to 50 years to allow for implementation of the Central Valley Regional Water Board's Salinity Management Strategy contained in the SNMP;</p> <p>(d) Require participation in the development of a total maximum daily load (TMDL) for EC in the southern Delta;</p> <p>(e) Require participation in efforts to implement the Salinity Management Strategy contained in the SNMP; and/or</p> <p>(f) Implement other actions consistent with policies adopted into the Water Quality Control Plan for the Sacramento-San Joaquin River Basin by the Central Valley Regional Water Board (e.g., offsets, alternative compliance projects).</p>	
1186	32	[ATT12: Central Valley Regional Water Quality Control Board Staff Report on Salinity Variance Policy, June 2014.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1186	33	[ATT13: Memorandum: Technical Evaluation of a Variance Policy and Interim Salinity Program for the Central Valley Region. December 6, 2012.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1187	1	Our economy in these rural counties is already struggling, with jobs difficult to find. Please do not handicap us further by stealing more water from our rivers and hurting ag and recreation!	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1188	1	Sunnyvale is a wholesale customer of the San Francisco Public Utility Commission (SFPUC) that purchases 50% of its potable water supply from the San Francisco Regional Water System. Under the SED proposal water supply available to Sunnyvale could be significantly reduced under drought conditions. Sunnyvale also purchases surface water from the Santa Clara Valley Water District, whose imported and local supplies would also be subject to significant reductions in a drought.	Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.
1188	2	Sunnyvale has made significant strides in water conservation in the past nine years. Gross per capita water use decreased 35% from 164 gallons per capita per day (gpcd) in 2006 to 106 gpcd in 2015. While we are very proud of this achievement, further saving through conservation would be much more difficult due to demand hardening.	The State Water Board acknowledges the Sunnyvale's water conservation effort and ongoing commitment to demand management. Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding demand hardening.
1188	3	Since outdoor use represents a relatively small proportion of Sunnyvale's commercial,	Please see response to comment 1188-1. Please also see Master Response 8.5, Assessment of Potential

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		<p>industrial, and institutional account water demand, these customers generally have fewer opportunities to reduce water use without changing their operations or incurring significant economic impacts.</p>	<p>Effects on the San Francisco Bay Area Regional Water System, for a discussion regarding economic considerations, growth effects, environmental effects based on a rationing-only approach, and demand management.</p>
1188	4	<ul style="list-style-type: none"> The City of Sunnyvale is very concerned that actions proposed under the SED result in an increase in greenhouse gas emissions resulting in a significant impact to the environment. According to SED Table 14-15, LSJR Alternative 4 results in additional emissions of 64,984 metric ton of CO₂e per year. SED Table ES-21 indicates that impacts to Energy and Greenhouse Gases are significant and unavoidable for LSJR alternatives 2 with Adaptive Implementation, 3 and 4. With the reduction of greenhouse gases being such an important policy for the State and our community, surely other alternatives to those analyzed under the SED should be developed and considered. Furthermore, the SED fails to identify what mitigation measures were considered to reduce greenhouse gas emission so the impacts could be mitigated as required by CEQA. 	<p>The results of GHG emissions and the resulting impact findings are found in Chapter 14, Energy and Greenhouse Gases. Please see Master Response 1.1, General Comments, regarding mitigation measures and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for further information on alternatives development. Greenhouse gas mitigation measure guidance documents were reviewed to determine if actions could be taken to reduce greenhouse gas emissions associated with the plan amendments. Measures from these documents are included in Chapter 14. Please refer to Master Response 1.1., General Comments, regarding the programmatic nature of the environmental impact analysis and the State Water Board’s obligations under CEQA to mitigate for the significant environmental impacts identified throughout the SED.</p>
1188	5	<ul style="list-style-type: none"> Based on estimates from the SFPUC, under the SED 35% unimpaired flow proposal, in times of drought the SFPUC service area could experience a 50% shortage of water. The assumptions in the SED that the SFPUC can simply acquire additional water supplies during a drought are unrealistic, resulting in the potential impacts from the SED being underestimated and not disclosed to the public. Even if additional supplies were available, the SED didn't adequately analyze what infrastructure would be needed to deliver that water to the SFPUC service area. Economic impacts from a 50% water shortage in the SFPUC service area would be severe for exiting businesses and economic development in the region. Sunnyvale requests that the SED fully analyze the economic and environmental impacts caused by a more realistic drought scenario before any decisions are made about SED implementation. 	<p>Please see response for comment 1188-1 and 1188-3.</p>
1188	6	<ul style="list-style-type: none"> Sunnyvale and other nearby communities use groundwater to supplement its surface water supplies. Due to the reduction of water supplies proposed by the SED, additional groundwater pumping could have potentially significant impacts, such as groundwater overdraft, sea water intrusion, and land subsidence, which were not adequately analyzed in the SED. The City of Sunnyvale requests that the SED analyze potential impacts on the Santa Clara and Llagas Subbasins of the Santa Clara Valley Basin from additional groundwater pumping. 	<p>Please see response to comment 1188-1. Please also see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System regarding groundwater use. Finally, please also see Master Response 1.1, General Comments, for a general discussion as to the approach to the analyses contained in the SED, and the programmatic nature of analysis, and Master Response 8.5, for a more specific discussion of programmatic analysis.</p>
1188	7	<p>The City is Sunnyvale is very concerned that reduced water supplies under the SED will impact the City's and the region's ability to produce an adequate housing supply including affordable housing. When the City is considering larger housing and commercial developments, current State law requires us to prepare a Water Supply Assessment in accordance with Senate Bill 610 to determine if the water supply is adequate to serve the new development. The water supply reductions proposed by the SED have not been taken into consideration in the City's current land-use plans and water supply reductions could impact the City's ability to zone for additional housing units. Will water reductions proposed by the SED impact housing goals established in regional plans such as the Bay Area Plan 2013? Sunnyvale requests that the SED analyze potential impacts to housing production and affordable housing based on a reduced water supply including compatibility with regional plans such as the Bay Area Plan 2013 and Bay Area Regional Housing Needs Assessment.</p>	<p>Please see response to comment 1188-1 and 3. The commenter appears to suggest that the plan amendments will result in water supply assessments (WSA) that do not identify sufficient available water for new developments. The modern WSA requirement was adopted as part of the “show me the water” package passed by the legislature in 2001 which included SB 610 (Costa). As stated in the September 12, 2001 Senate Floor Analysis for SB 610, the bill’s proponents asserted that providing early knowledge of where growth is being planned would ensure that planning for new water supplies would begin as early as possible. Importantly, those proponents stated, that this “early planning is essential as California’s water supply future evolves away from heavy reliance on dams and reservoirs and towards a more diversified mix of water projects: additional reclamation, conservation, conjunctive use, water transfers, offstream storage, desalination facilities, and other strategies.” In other words, SB 610 recognized that changing water needs should be met but that it would require planning and implementation of a diverse portfolio of actions. The WSA requirement in SB 610 was meant to facilitate that planning and implementation by no longer allowing large-scale residential, commercial, or industrial developments to rely on unsustainable water assumptions. That approach is consistent with the SED, including Appendix L, City and County of San Francisco Analyses. Those analyses summarize the portfolio of actions SFPUC could take to meet water supply demand to make</p>

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			<p>up any reductions in water supply from its existing dam and reservoir. The SED recognizes that those actions could include, for example, payments to the irrigation districts on the Tuolumne River to release water to meet flow requirements (thus allowing CCSF to retain water in Hetch Hetchy), water transfers, In-Delta diversion(s), and desalination. As identified in the SED, Table L.6-4, the 2010 baseline economic output of San Francisco County was approximately \$125 billion and the Bay Area Region as a whole was approximately \$645 billion. It is unreasonable to assume that a region with \$645 billion in economic output will refuse to implement water supply actions.</p> <p>Plan Bay Area is a regional transportation plan and sustainable communities strategy that, in part, integrates transportation, land-use and housing as part of a strategy to reduce greenhouse gas emissions. For the reasons discussed above and in Master Response 8.5, there is no support for the suggestion that the plan amendments will result in inadequate water supplies in the SFPUC RWS service area such that the pattern of growth called for in Plan Bay Area would be displaced.</p> <p>The plan amendments are not required to meet the reduction targets mandated by SB375 and identified in the Plan Bay Area, as the plan amendments are part of a the Bay-Delta Water Quality Control Plan and not an element the Plan Bay Area. The reduction targets are only applicable to Plan Bay Area, and Plan Bay Area is a regional transportation plan indicating how regional transportation planning will be implemented and funded.</p>
1188	8	<p>Overall the SED has an extraordinary number of unmitigated significant environmental impacts. Tables ES-20 and 21 identify that the SED will create significant and unavoidable impacts to:</p> <ul style="list-style-type: none"> o Aquatic Biological Resources o Terrestrial Biologic Resources o Recreation Resources and Aesthetics o Water Service Providers o Energy and Greenhouse Gases o Agriculture Resources <p>The water supply reduction strategies proposed by the SED are simply too impactful, and there are insufficient measures proposed to lessen or mitigate the impacts created. In addition, legitimate questions have been raised about whether the benefits described by the SED have sufficient scientific evidence to support reliable conclusions about those projected benefits. Under these circumstances the City of Sunnyvale feels that the State Water Resources Control Board cannot make the findings needed to adopt a Statement of Overriding Considerations.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments regarding mitigation measures and the State Water Boards authorities. The State Water Board will prepare a Statement of Overriding Considerations based on the whole of the record and the information contained in the SED.</p>
1188	9	<p>The City of Sunnyvale requests that environmental and economic impacts of any water supply reductions to the San Francisco Public Utility Commission or Santa Clara Valley Water District be fully and adequately analyzed as part of the SWRCB's proposed flow alternatives. The SED as currently proposed does not do an adequate job of analyzing potential impacts or to mitigate the impacts that have been identified.</p>	<p>Please see response to comment 1188-3. Please see Master Response 1.1, General Comments, regarding the general approach to the analyses contained in the SED, the level of analyses contained in the SED, and the mitigation proposed throughout the SED.</p>
1188	10	<p>The City of Sunnyvale shares BAWSCA's commitment to continue working closely with the diverse interests and stakeholders to develop a shared solution to the environmental</p>	<p>Please see Master Response 1.1, General Comments, for information regarding voluntary agreements and</p>

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		benefits sought by the SED.	collaboration with agencies.
1189	1	<p>We very much appreciate the Board’s consideration of this action. The lack of adequate flows in both the San Joaquin and the Sacramento Rivers has been one of the leading causes of the precipitous declines of all four of the salmon runs in the Central Valley. In a recent study by the Santa Cruz Science Center, it was concluded that increased flows in the Sacramento River and in the Delta led all other potential actions in the ability to improve the salmon populations of the Central Valley.</p> <p>We believe that under the public trust and in the balancing of beneficial water uses that the board has a clear obligation to provide these benefits to the salmon. The salmon populations have plummeted to near historic all time lows. Absent positive actions by the board and other State and Federal agencies, all the runs are facing potential extinctions.</p> <p>At the board’s hearing of November 29th, 2016, Captain Roger Thomas and Richard Pool presented evidence to the board on the deteriorating salmon populations. They urged that the flows be increased. These two men have recently completed an update to that information. It is titled, “The Status of the California Salmon and the California Salmon Industry”. A copy of the report is attached to this letter [ATT 1].</p> <p>Water4Fish is an advocacy organization which engages fishermen and the public in issues which involve water policies and fish. Over 88,000 people have signed its petitions asking for better Central Valley water delivery policies. Recently, several hundred supporters signed a Water4Fish petition specifically asking the Water Board for increased river flows for the salmon. The names of those petitioners are attached [ATT 2]. The Charter Captains of the Northern California Golden Gate Fishermen’s Association are also listed and support the additional flows. In good years, this fleet takes 250,000 men, women and children salmon fishing on the Pacific Ocean.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1189	2	<p>[From ATT 1]</p> <p>The salmon runs and the California salmon industry are both currently in very deep trouble. The populations of the Central Valley fall-run fish that support the industry are at near all time lows. The graphs in this report show the declines and the current status. There are three primary factors that have caused the decline.</p> <p>-- The most significant one has been the California drought of 2012 through 2016. High water temperatures in the upriver tributaries were lethal to 95% of the eggs incubating in the gravel.</p> <p>-- Poor ocean conditions in the form of higher than normal temperatures also took a heavy toll on survival.</p> <p>-- Last, the Central Valley Sacramento water delivery system destroyed millions of juvenile salmon by the way it was operated. River and Delta flows that the fall-run juveniles needed for out-migration survival were not provided and investments in habitat changes that would have mitigated some of the flow problems were not made.</p> <p>In 2015 and in 2016 the commercial salmon industry collapsed. There were not enough fish in the ocean to support them. Many of the fishermen have had to sell their boats to avoid bankruptcy. Today, many of the boats are still for sale and there are no buyers. Many of</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		<p>their families have gone to food lines to survive. The coastal communities from Morro Bay to Crescent City are dying with them. Marinas, service centers, retail stores, motels and restaurants all depend on the salmon industry for income.</p> <p>The Charter boat salmon fleet is close behind. In normal years this fleet catches over 100,000 fish annually. In 2015 the catch dropped to 37,441 and to 36,500 in 2016. For most of the season the salmon were not there to catch.</p> <p>Analysis</p> <p>We are now approaching the conditions that prevailed in 2008 and 2009 when the entire industry was shut down due to critically low populations. At that time, there were 906 retail outlets selling salmon equipment. It is estimated that at least 100 of them failed and we also lost hundreds of commercial boats. This chart [ATT 1: ATT 1] shows the steady declines in commercial landings from 1980 through 2016.</p> <p>The commercial industry needs at least 200,000 harvestable salmon in the ocean to cover expenses and earn a profit. Below 200,000 the fish are so spread out that it is not worth fishing. The chart [ATT 1: ATT 1] shows the recent unsatisfactory harvests. 2016 dropped to only 55,300 harvested fish.</p> <p>This sport fishing table [ATT 1: ATT 2] shows the same pattern for the recreational ocean harvest. Most of these fish are caught by the charter fleet operations out of Half Moon Bay, San Francisco Bay, Fort Bragg and Eureka. In 2016, only 36,500 fish were caught. When the fishing is not good, the charter customers stay home and the fleet faces losses. The ocean abundance for 2017 and 2018 does not appear any better than 2016. A number of the charter captains have given up and have their boats for sale.</p> <p>This table [ATT 1: ATT 4] shows some of the larger salmon fishing and boating businesses that failed during the 2008 -2009 shutdown. There were also a lot of commercial boats that permanently left the business. Today, many more are at risk.</p> <p>In 2008 and 2009, Governor Schwarzenegger declared a salmon fishing disaster and the commercial and charter fishermen received federal compensation. Today, they are receiving no help. When the industry is operating, it supports 23,000 jobs and generates \$1.4 billion in economic benefits for the state. When the ocean abundance is adequate, approximately 500,000 California residents fish for salmon annually. Recently, thirty nine prominent chefs and restaurant owners in the Bay Area wrote a letter supporting the protection of the California salmon runs. Several of them said salmon was the top choice on their menu. This is strong evidence of public support and the industry now needs help in recovering these iconic fish.</p> <p>This report is about the fall-run salmon because it has historically been the most abundant and has supported the salmon industry. There are three other runs in the Central Valley but their populations are not high enough to support the industry. They are the winterrun, the spring-run and the late fall-run. The winter and spring-runs are listed under the Endangered Species Act as extinction risks. All of the runs are now critically low. The implications go far beyond the salmon industry. Not only are the salmon a wholesome food source for the public but they are also a food source for many other ocean species.</p> <p>Seals and sea lions in the ocean feed on salmon and they are now starving. The same thing</p>	

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		<p>is true of the Southern Resident Killer whales that are already listed as endangered. The biggest impacts are on the young of these species. They are now often found dead and washed up on the beaches.</p> <p>Most of the California public is unaware of these problems. Those that are aware strongly support bringing the salmon back. It will ultimately be up to the public, the fish agencies, the water agencies and the political leaders that represent them, to decide if extinctions are to be avoided and if the salmon are to be recovered.</p> <p>The next two charts [ATT 1: ATT 6 and ATT 1: ATT 7] show the current status of the commercial industry and the serious risk it faces if changes are not made to improve survival. The first chart [ATT 1: ATT 6] shows a plot of the ocean abundance of the fall-run salmon. Ocean abundance is the total number of surviving adult salmon that are in the ocean each year. It is calculated by adding the number of fish that are harvested to the number that return to the Central Valley to spawn. In 2002, there were 1,462,000 adult fall-run salmon in the ocean. By 2009 there were only 43,778. The winter of 2010-2011 was very wet and survival of the juveniles was high. Three years later the ocean abundance hit a modern peak of 899,503 adults. You can then see the red zone [ATT 1: ATT 6] where there are not enough fish currently in the ocean to sustain the industry. The outlook is currently bad and it is likely getting worse in the near term future.</p> <p>In 2015, Water4Fish, a non-profit salmon organization, developed a model to forecast the impact of the drought from 2015 through 2018. The fish agencies assisted by providing data on returning adults, water temperatures, flows and screw trap counts of the outmigrating juveniles. The results are shown on the blue line on the next page [ATT 1: ATT 6] and they are grim. Most of the spawning areas during the drought had high water temperatures which were lethal to the incubating eggs. As a result of this coupled with high predation in low water migration corridors, very few juvenile salmon made it to the ocean and the adult forecast 3 years later is below the minimum threshold.</p> <p>It takes a minimum of approximately 400,000 adult salmon in the ocean to have an economically viable commercial industry. At the minimum of 400,000, the industry would harvest about 50% of the fish or 200,000 and the remaining 200,000 would return to spawn. If the total Chinook returns get below the range of 122,000 to 180,000 fish, the government curtails the fishery to avoid putting the runs at extinction risk. The chart [ATT 1: ATT 6] shows that starting in 2015 the fall-run was below minimums. The commercial industry and the recreational industry were both curtailed by the government in 2015 and 2016 and besides that, the ocean was so void of fish that most commercial fishermen could not find enough of them to even pay their expenses. Both 2015 and 2016 were disastrous for the commercial part the industry. Unfortunately, the blue line [ATT 1: ATT 6] suggests there is no improvement in the short term future.</p> <p>In 2015, the Water4Fish model forecast an abundance of 294,000 fish which was very close to the actual count of 288,000 recorded at the end of the year. That provides some degree of confidence in the model. The chart [ATT 1: ATT 6] shows the original government 2015 forecast was 652,000 fish which missed the mark badly. The U.S. Fish and Wildlife Service, the Bureau of Reclamation and the stakeholders are working on a comprehensive new model which will improve the forecasts into the future.</p> <p>The last chart [ATT 1: ATT 7] shows the impact of the problems of the current water delivery system and the drought on the natural spawning fall-run fish. This data excludes the</p>	

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		<p>hatchery fish. The chart [ATT 1: ATT 7] shows a serious problem. During the drought, the severe upriver temperature and flow problems primarily impacted the natural spawning fish. Most of the hatcheries either had cold water sources or chillers on site. The chart [ATT 1: ATT 7] shows the result. In 2015, there were only 73,123 natural spawning adults that returned to the Sacramento River and in 2016, the count dropped 26% more to only 54,626 fish. The model suggests that this problem is only going to get worse as the impacts from the 2014 and 2015 droughts take their toll on the adults 3 years later in 2017 and 2018. This is the most serious problem of all. At these low levels, more drought, poor ocean conditions or something like a disease breakout could wipe out the entire population. There is no margin for error left.</p> <p>This is probably the most overpowering reason of all on why we need help to recover these fish. The blue line [ATT 1: ATT 7] shows where we are headed in the near term future. Increased river flows would help considerably but we also need to break the business as usual attitude that is stalling dozens of habitat and predation projects in both the Sacramento and San Joaquin watersheds. Should this run become ESA listed, every water user in the state will be severely impacted. We can avoid this but the time for action is now. Also, it is now time that we recognize the crisis that is continuing to get worse for the commercial fishing families.</p>	
1189	3	[ATT 1: ATT 1: Graph of Commercial Salmon Harvest in California, 1980-2016]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	4	[ATT 1: ATT 2: Graph of Sport Ocean Salmon Harvest in California, 1980-2016]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	5	[ATT 1: ATT 3: Photograph of fishing boat]	This attachment was included with the comment letter. The attachment does not make a general comment regarding the plan amendments or raise a significant environmental issue.
1189	6	[ATT 1: ATT 4: Table of Major Fishing and Marine Failures in 2008 and 2009]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	7	[ATT 1: ATT 5: Photo of a salmon]	This attachment was included with the comment letter. The attachment does not make a general comment regarding the plan amendments or raise a significant environmental issue.
1189	8	[ATT 1: ATT 6: Graph of Central Valley Fall-Run Ocean Abundance, 2000-2018]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	9	[ATT 1: ATT 7: Graph of Natural Spawning Adult Fall-Run Salmon Returns, 2000-2018]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	10	<p>[From ATT 1] Actions that can bring about a Salmon Recovery</p> <p>In 2012, the Golden Gate Salmon Association (GGSA) completed a two-year study on where the Central Valley salmon were being lost and what could be done to reduce these losses. The primary focus was on the Sacramento system since the losses on the San Joaquin side are near 100%. The three California State and Federal fish agencies assisted with this study. The study concluded that most of the losses are occurring as the juvenile salmon are trying to migrate to the ocean. The losses are the highest in the main stem Sacramento River and in the Delta. These conclusions have been collaborated by the studies of juvenile salmon</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		<p>survival by the Santa Cruz Science Center, a branch of the National Marine Fisheries Service.</p> <p>Starting in 2007, the Science Center has been tracking acoustical tagged salmon smolts in 17 tracking stations from Jelly’s Ferry in the upper Sacramento to the Golden Gate. In high water, high river flow years, they show excellent survival. However, in low water and low river flow years they show extremely low survival figures. For example, 2007, 2008 and 2009 were all low water years. The average survival figures in these years show that by the time the smolts reached Hamilton City, only 76 miles down the river, over half of them had perished with a survival of only 44%. By the time the smolts reached the Delta, overall survival was only 25%. Out of the Delta survival was 12% and at the Golden Gate overall survival was only 5.3%. The salmon runs are clearly unsustainable at these levels. It takes at least 35% survival at the Golden Gate to have a sustainable run. Most of the river and Delta losses were attributed to predation.</p> <p>The GGSA study scoped 27 projects where investments could yield early improvements. They mostly targeted river and Delta projects because those are the highest loss areas. A few of the projects have been completed, and now several are receiving funding but several more remain stalled. In 2016, the CVPIA restoration fund approved some very important Sacramento River habitat projects including one project to add edge refugia (tree brush) along the edges of the river just below Keswick Dam where the juveniles need hiding places. Another important approved project will open up to 13 side channels in the upper Sacramento where juveniles can hide from predators, feed and grow. Three predation avoidance projects were also approved.</p> <p>Stalled projects that could make a huge difference in survival include opening the Yolo Bypass so that more juveniles can avoid the Delta losses and can also grow in protected habitats. Several predation projects are stalled including the major loss points in the Delta at Clifton Court, at the Federal CVP pumps and at the pump salvage system.</p> <p>One major problem that the State and Federal governments could solve is the permitting process. Frequently, it is taking up to three years to get a project approved. We need a fast track system.</p> <p>Another problem is funding. Every year the CVPIA restoration fund which is run by the U.S. Fish and Wildlife Service receives approximately \$25 million from the water contractors which is supposed to go to doubling the wild salmon populations. In the past, the program has been a miserable failure. Instead of investing in the river and Delta projects where the big problems existed, most of the money went to improving habitat in the upper tributaries. In their own right, these were good projects but they failed to deliver juveniles to the Golden Gate. The heavy river and Delta losses prevailed and survival at the Golden Gate was unsatisfactory. In 2016 the system was changed -- giving the stakeholders more say in the projects that should proceed but the old influences still prevail. In 2017 most of the spending was still in the upper tributaries. Only two small projects in the Delta were approved. 2018 may end up the same. More change is needed.</p> <p>The fall-run suffers from another problem. The National Marine Fisheries Service has the responsibility to establish and maintain the provisions of the Endangered Species Act for the salmon. For the most part, the agency has done a very good job in protecting the ESA listed salmon species in the Central Valley from water delivery and export pumping practices that would cause extinctions. However, they are making a number of decisions that are ending up driving the fall-run towards extinction. In two instances, they have forced barriers that</p>	

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		<p>take away significant fall-run spawning areas. In other instances, they force high flows to be maintained in the main stem Sacramento River and then cuts occur after the fall-run have spawned. The result is millions of fall-run eggs being left high and dry to perish along the river edges. In other instances, they reject or fail to support important fall-run improvement projects because they might remotely affect a listed fish. NMFS has the ability to make waivers in certain instances. If a listing of the fall-run is to be avoided, we need more waivers granted.</p>	
1189	11	[ATT 1: ATT 8: Graph of the rise and fall of fall-run salmon returns, 1991-2015]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1189	12	[ATT 2: List of Salmon Supporters of Increased River Flows by the State Water Resources Control Board]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1190	1	<p>The [Turlock Groundwater Basin Association] (TGBA) provides a sound basis and starting point for the increased groundwater management, sustainability, and coordination required under the Sustainable Groundwater Management Act (SGMA). As a first step, the local agencies have been actively coordinating the formation of two Groundwater Sustainability Agencies (GSAs), ensuring the entire basin is covered and avoiding unintentional overlap. In addition, these same local water agencies, under the umbrellas of the TGBA, have been actively designing a planning process to prepare the subbasin to complete a basinwide Groundwater Sustainability Plan (GSP).</p> <p>The TGBA believes that the Substitute Environmental Draft Document (SED) conflicts with SGMA in several areas. First, the SED doesn't adequately address impacts of the propose Lower San Joaquin River (LSJR) alternatives on groundwater resources. The SED admits that the LSJR alternatives will "substantially deplete groundwater supplies or interfere with groundwater recharge," something that will not be permitted under SGMA. As a result, the proposed project will jeopardize the ability for local water agencies to reliably provide safe, affordable water supplies.</p> <p>Second, the SED does not utilize standard, readily available tools for its groundwater analysis. A variety of regional or local groundwater modeling tools are available and should have been used to quantitatively evaluate the impacts and demonstrate how reduced surface water deliveries will affect the subbasin. Because typical groundwater and surface water modeling tools were not used, the SED analysis includes broad averages and relies on the concept that the impacts "cannot be determined with certainty".</p> <p>Third, the State Water Resources Control Board (SWRCB) should have evaluated the impacts of the SED, combined with the requirements of SGMA. This analysis would have taken into consideration the existing overdraft within the Turlock Subbasin, and SGMA's sustainability requirements. Instead, the SED ignores these issues and seems to consider SGMA a mitigation measure. The SED states that, "Mitigation to reduce significant impacts on groundwater resources could include the State Water Resources Control Board or local agencies exercising their various authorities over groundwater users, including authorities under SGMA." (Draft Revised SED, Page 9-66) SGMA was not designed to mitigate for the SED. By treating SGMA as a mitigation measure, and not considering how the region could achieve "sustainability" along with the SED requirements the potential impacts are not fully evaluated or disclosed.</p> <p>Fourth, the SED's reliance on groundwater as the primary source of mitigation for the LSJR</p>	<p>The State Water Board appreciates the long history of groundwater management TGBA has been undertaking and the commitment TGBA has made to comply with SGMA.</p> <p>The State Water Board used best available science and information for the SED, and wrote the SED as objectively and completely as possible, following the appropriate legal process and in compliance with State CEQA Guidelines. A wide range of published literature, official reports and personal communications is cited to reasonably and objectively disclose the environmental setting of the plan area.</p> <p>The SED is a program-level first-tier evaluation; a location-specific groundwater analysis is outside the scope of the SED, because the State Water Board cannot reasonably foresee the mitigation actions local water users would take in response to surface water reductions, and quantification of the impacts of the proposed LSJR flow objectives would be speculative. The regional and local groundwater modeling tools noted in the comment are site specific, highly technical, and require detailed location-specific analyses of basin geology, hydrology, local water use and recharge. This type of modeling is beyond the scope of the SED. Please see Master Response 1.1, General Comments, for a discussion the programmatic nature of the SED and the adequacy of such an approach, the scope of the SED, and the requirements of CEQA for program-level review.</p> <p>Existing groundwater conditions (including a discussion on overdraft) in the plan area are discussed in Chapter 9, Groundwater Resources, Section 9.2.1, San Joaquin Valley Groundwater Basin and Subbasins. An overview of groundwater use in the four main subbasins underlying the plan area (Eastern San Joaquin, Modesto, Turlock, and extended Merced) is provided in Chapter 9, Groundwater Resources, Section 9.2.2, Subbasin Groundwater Use. Potential impacts of the plan amendments on groundwater resources (including reduced groundwater recharge from surface water percolation) are discussed in Chapter 9, Groundwater Resources, Section 9.4.3, Impacts and Mitigation Measures.</p> <p>The State Water Board recognizes the negative impacts of overdraft. Groundwater overdraft conditions in the plan area are legacy issues caused by unsustainable agricultural expansion. SGMA was passed by the legislature in 2014 to address overdraft issues. The State Water Board also has a legal mandate to reasonably protect fish and wildlife beneficial uses, which it is proposing to do with the plan amendments. The State Water Board acknowledges it will be challenging, but SGMA compliance cannot occur at the expense of reasonably protecting surface water beneficial uses; both groundwater and surface water must be protected. Implementation of LSJR flow objectives does not conflict with the Sustainable Groundwater Management Act (SGMA). Comprehensively addressing both groundwater and surface water resources allows for integrated planning that does not trade impacts between surface water and groundwater.</p> <p>The SED and plan amendments do not require or encourage groundwater substitution as a response to</p>

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		<p>alternatives is unrealistic. Although the subbasin is not listed as critically overdrafted, it is well documented that the Turlock Subbasin is not without its challenges. Current groundwater conditions rely in large part on recharge of surface water imported from the Tuolumne River. Extensive conjunctive use and coordination within the Turlock Subbasin has proven successful and prevented it from being listed as critically overdrafted by the Department of Water Resources. Even with this recharge, a cone of depression has formed on the eastern side of the subbasin where groundwater is relied upon for supply. The SED proposes to significantly reduce surface water supplies, which will adversely impact the ability for the subbasin to achieve sustainability, and will make continuing to pump at existing levels even more of a challenge. The SED ignores this premise, and instead assumes that existing pumping can continue or increase to compensate for lost supplies. This defies logic and is contrary to SGMA's sustainability requirements.</p>	<p>reductions in surface water. The SED merely reflects the historical local response to increase groundwater pumping when surface water availability is reduced. Groundwater replacement is only one of the actions water users may choose to take to replace surface water that may no longer be available due to implementation of a plan alternative (Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.2, Lower San Joaquin River Alternatives—Other Indirect Actions). It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA.</p> <p>SGMA gives GSAs many tools for achieving sustainability, including the authority to regulate groundwater extractions (Wat. Code, § 10726.4, subdv. a). SGMA does not dictate which tools GSAs use to balance basins. Rather, GSAs will define sustainability at the local level, based on the needs of the beneficial uses and users of groundwater in each basin, and choose an appropriate set of tools to achieve their sustainability goal. Future GSPs will have to account for the amount of surface water available in accordance with all relevant water regulations, including the proposed plan amendments. Therefore, mitigation by local authorities under the SGMA framework is feasible.</p> <p>The SED uses historical 2009 levels of groundwater pumping for the baseline analyses. This is appropriate, because 2009 is the year the State Water Board issued the Notice of Preparation for the SED. It is not appropriate to include SGMA in the baseline or in the alternative analysis, because the baseline predates SGMA, no GSPs were developed before the release of the Recirculated SED, and it is unknown what actions GSAs will take to achieve the sustainability goal. Therefore, any impact assessment would be speculative and beyond the scope of the SED. However, SGMA was properly considered in the analyses, both as an existing legal requirement to prevent further degradation of groundwater basins and as a potential cumulative limit on future irrigation supplies.</p> <p>For further discussion on SGMA in the context of the plan amendments and the groundwater impact analysis approach, please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act.</p> <p>For a discussion on why the LSJR flow objectives would not jeopardize municipal water supply, please see Master Response 3.6, Service Providers.</p> <p>For discussions on modeling assumptions for groundwater resources used for the agricultural economic analyses and agricultural economic effects, please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model and Master Response 8.2, Regional Agricultural Economic Effects.</p>
1190	2	<p>SGMA establishes clear definitions for what is considered "sustainable" and by doing so, establishes clear requirements that must be met to achieve sustainability. The SED is flawed in its approach to addressing SGMA. In lieu of evaluating the impacts of implementing the Water Quality Control Plan while also achieving the "sustainability" required by SGMA, the SED treats SGMA as a mitigation measure. SGMA was not developed to mitigate for the SED. By proposing SGMA as a mitigation measure, the SWRCB appears to shed its responsibility for mitigating the impacts of its project. Instead, it speculates that the same agencies that will be adversely impacted by the SED should also have to take measures to reduce the impacts to groundwater caused by the SED. In doing so, the SED reassigns responsibility for mitigating the State's actions squarely upon the local agencies that are being adversely impacted by the project. This is clearly not the intent of SGMA or the CEQA process.</p>	<p>Please see response to Comment 1190-1.</p>
1190	3	<p>Although the SWRCB is correct in specifying that it is up to the local agencies to develop GSPs, and determine the best approach for achieving sustainability, the SWRCB is the regulatory backstop if the local efforts are unsuccessful. SWRCB staff in charge of the SGMA</p>	<p>If local agencies are unable or unwilling to manage groundwater sustainably, SGMA authorizes State Water Board intervention in order to protect the resource (Wat. Code § 10735- § 10736.6). The SGMA deadlines for state intervention are prospective, and there is no evidence to support a conclusion that state intervention</p>

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		<p>compliance process has been very clear in how the SWRCB backstop will function. If local efforts are unsuccessful, and management is deferred to the SWRCB, the SWRCB will not look for additional means to recharge the subbasin or other creative ways to comply with SGMA. Instead, the SWRCB will simply restrict groundwater use until sustainability is reached. The SED neglects to evaluate this worst-case scenario. If, as the SED implies, the SWRCB is hesitant in determining what additional recharge or other measures might be able to achieve sustainability, the SED must evaluate the SWRCB backstop implemented in combination with the proposed reductions in water supply under the SED. Without such an analysis, the SED fails to disclose and evaluate the full range of potential impacts.</p>	<p>under SGMA is likely or inevitable in the plan area. State intervention will be basin-specific, and it would be speculative to assume how state intervention could or would be implemented. Moreover, the State Water Board is not required to assume an ultimate worst-case scenario for each potential impact.</p> <p>Please see response to Comment 1190-1.</p>
1190	4	<p>The SED assumes varying levels of groundwater pumping, none of which has been verified against publicly available planning documents. The SWRCB should describe how the assumptions used in the SED with respect to groundwater pumping compare against publicly available planning documents.</p>	<p>Please see response to Comment 1190-1.</p>
1190	5	<p>TGBA [Turlock Groundwater Basin Association] disagrees with the SED's statement that "the best indication of the potential for groundwater impacts that may occur if surface water diversions are reduced in drought years is the percentage of the irrigated area that falls within the irrigation district service areas and usually relies on surface water." (p. 9-19) The assumption neglects the fact that surface water supplies from the Tuolumne River are the main source of recharge within the subbasin. Reductions in surface water supplies will impact everyone in the subbasin.</p> <p>a. Areas to the east of Turlock Irrigation District (TID), which rely entirely on groundwater for their supply, rely in part on the recharge occurring within TID. These impacts are not evaluated.</p> <p>b. Public water systems, industries, and private domestic wells within the Turlock Subbasin rely solely on groundwater for their supply. The proposed SED will impact the ability for local recharge, which in turn impacts groundwater dependent water supplies. How does the SED analyze potential impacts to the groundwater pumpers that are solely dependent on groundwater?</p>	<p>Please see response to Comment 1190-1.</p>
1190	6	<p>The SED proposes recharge as a potential mitigation measure to offset some of the impacts from surface water supplies lost due to the SED. DWR recently released a draft report documenting water available for recharge for each subbasin. The report showed that a mere 10,000 AF per year might be available within the Turlock Subbasin. This is not nearly enough water to compensate for the proposed reductions in surface water supplies. The Turlock Subbasin is not connected to state or federal canal systems. Nearly all of the local resources to recharges the subbasin already, or helps to contribute to the instream flows of the Tuolumne, Merced or San Joaquin rivers. To be a viable mitigation measure, the SED needs to identify viable recharge alternatives rather than arbitrarily stating that water could be recharged. Without such an analysis, even at a programmatic level, the SED is misrepresentative by providing the false impression that replacement supplies for recharge are available.</p>	<p>The SED does not propose recharge as a potential mitigation measure. Potential reductions in net recharge to groundwater due to the proposed LSJR flow objectives is discussed in Chapter 9, Groundwater Resources.</p> <p>Please see response to Comment 1190-1.</p>
1190	7	<p>The SWRCB should explain how the SED plans to incorporate DWR's recently released publication, "Guide to Best Management Practices for Sustainable Groundwater Management", December 2016. The SWRCB should review the report and revise the SED to be consistent with the rest of the state's planning approach to groundwater management</p>	<p>The State Water Board acknowledges there is more than one way to approach modeling and analysis and there are many data sources available. The State Water Board is not obligated to conduct an exhaustive analysis using every approach, modeling tool, and data set available. For further discussion the use of best available data and the substantial evidence in the SED, please see Master Response 1.1, General Comments.</p>

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		and SGMA implementation efforts.	<p>Furthermore, the content provided in the comment does not contradict the information contained in Chapter 9, Groundwater Resources, and would not change the impact determinations presented therein.</p> <p>Therefore, the requested revision identified by the commenter is not included in the SED.</p>
1190	8	<p>The TGBA [Turlock Groundwater Basin Association] through coordination of its member agencies has been managing groundwater in the Turlock Subbasin for over 20 years. The local agencies are in the last steps of forming GSAs and submitting the necessary information to demonstrate our intent to comply with SGMA requirements and manage groundwater at a local level. SGMA was developed under the premise that locals are best suited to manage their groundwater supplies. Implementing the Water Quality Control Plan as proposed will significantly impact the eastern side of the San Joaquin Valley.</p> <p>For reasons described above and as detailed in various comments submitted by members of the TGBA, the SED underestimates the impacts on the Turlock Subbasin and the San Joaquin Valley. The SED ignores the importance of the existing groundwater/surface water relationship based on conjunctive use, which has sustained Turlock and its neighboring subbasins. Substantially reducing the amount of surface water available for use locally will be devastating to not only the area served by these supplies, but also the subbasin and San Joaquin Valley region. The TGBA encourages the State Water Resources Control Board to withdraw the current SED and work with local agencies to develop effective, sustainable, and durable solutions to regional issues in the Sacramento-San Joaquin River Delta.</p>	<p>Please see response to Comment 1190-1.</p> <p>The proposed plan amendments provide several opportunities for coordination and collaboration. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the purpose of the STM Working Group and the roles and responsibilities of the participants of the STM Working Group as described in the program of implementation of Appendix K.</p>
1191	1	<p>BAWSCA supports the objectives of the Bay-Delta Plan and is committed to working with other stakeholders to protect water quality in the Bay-Delta Water Quality Control Plan for humans, fish, and other wildlife; understands the difficult task faced by the State Board; and supports the "Alternative to promote the expansion of natural fall-run Chinook salmon and Oncorhynchus mykiss populations in the lower Tuolumne River while maintaining water supply reliability" proposal put forth by the San Francisco Public Utilities Commission (SFPUC) as a means to accomplish the benefits for the Tuolumne River needed to restore and sustain the long-term health of the Bay Delta. [Footnote 1: See Comments by the City and County of San Francisco (CCSF) to the Draft Substitute Environmental Document in Support of Potential Changes to the Bay-Delta Plan (CCSF SED Comments), Alternative to promote the expansion of natural fall-run Chinook salmon and Oncorhynchus mykiss populations in the lower Tuolumne River while maintaining water supply reliability (SFPUC Alternative).]</p>	<p>Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments for responses to comments regarding alternatives to the plan amendments, including the San Francisco Public Utilities Commission (SFPUC) Alternative.</p>
1191	2	<p>BAWSCA's interest in the 2016 Draft SED.</p> <p>BAWSCA is a special district that represents the interests of twenty-four cities and water districts and two private utilities that are long term purchasers of wholesale water from CCSF's Regional Water System ("RWS"), including water originating on the Tuolumne River. [Footnote 2: Wat. Code, § 81300 et seq.; State Water Resources Control Board, California Environmental Protection Agency, Draft Revised Substitute Environmental Document In Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality (September 2016) Appendix L, p. L-6 (hereinafter "2016 Draft SED").]</p> <p>BAWSCA's governing board includes representatives from each of its twenty-six member agencies and these twenty-six agencies are hereinafter referred to as "BAWSCA agencies." Through the BAWSCA agencies, the water purchased from CCSF is redistributed to over 1.78</p>	<p>The commenter provided context for the Bay Area Water Supply & Conservation Agency's (BAWSCA's) interest in the SED. The commenter lists the interests that BAWSCA represents, and describes the governing board. The State Water Board appreciates receiving this type of information because it provides context in understanding the comments of a particular commenter that are germane to the SED and plan amendments. Please see Master Response 1.1, General Comments, discussing commenter-provided background content.</p>

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		<p>million people and over 40,000 businesses and community organizations in Alameda, Santa Clara and San Mateo counties. BAWSCA, the BAWSCA agencies, and the 1.78 million customers relying on the RWS have a clear interest, individually and collectively, in a reliable water system and in the 2016 Draft SED. Figure 1 [ATT1] illustrates the BAWSCA service area and agencies.</p>	
1191	3	<p>[ATT1: Figure 1: BAWSCA Member Agency Service Area.]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>
1191	4	<p>BAWSCA agencies are reliant on the Hetch Hetchy watershed.</p> <p>The Hetch Hetchy Watershed, which is in the upper Tuolumne River, provides approximately 85 percent of CCSF's RWS supply. Figure 2 [ATT2] illustrates the RWS. The Hetch Hetchy Reservoir water feeds into an aqueduct system delivering water 167 miles by gravity to Bay Area reservoirs and, ultimately, to Bay Area customers. The remaining 15 percent of the RWS supply is drawn from local surface waters in the Alameda and Peninsula watersheds. The actual split between the watershed resources varies from year to year depending on the year's hydrology and operational circumstances.</p> <p>Approximately two-thirds of CCSF's total water deliveries are made to BAWSCA agencies - meaning BAWSCA agencies are the primary recipient of water from the Hetch Hetchy Watershed. [Footnote 3: 2016 Draft SED, Appendix L, Table L.3-1.] Such deliveries are annually made according to a contractual agreement between each BAWSCA agency and the CCSF. Fifteen of the BAWSCA agencies rely on the RWS for 100 percent of the potable water they distribute and all but one of the BAWSCA agencies obtain more than 50 percent of their supply from the RWS. Figure 3 [ATT3] illustrates the sources of supply for BAWSCA member agencies during Fiscal Year 2014-2015 and Figure 4 [ATT4] illustrates the projected sources of supply for BAWSCA member agencies in 2040. The Lower San Joaquin River (LSJR) Alternatives presented in the SED would dramatically affect the amount of surface water diversions to the RWS. [Footnote 4: 2016 Draft SED, Appendix L, p. L-1.]</p> <p>The water supplies currently available to the BAWSCA agencies are limited, and reliability is affected by several issues including policy decisions, hydrologic conditions, regulatory actions, climate change, and other factors. [Footnote 5: Bay Area Water Supply & Conservation Agency, Long-Term Reliable Water Supply Strategy Phase 1 Scoping Report, (May 27, 2010) at p. 2-6, available at http://bawasca.org/uploads/userfiles/files/BAWSCA%20Strategy%20Final%20Report%202010_05_27.pdf (hereinafter "BAWSCA Phase 1 Scoping Report").]</p> <p>CCSF policy decisions have limited the water supplies currently available to the BAWSCA member agencies. As part of the Water System Improvement Plan (WSIP), Program Environmental Impact Report (PEIR), CCSF evaluated and unilaterally selected the Phased WSIP Variant as the preferred alternative. The Phased WSIP Variant included full implementation of the proposed WSIP facility improvement projects to ensure that public health, seismic safety, and delivery reliability goals are achieved, but limited RWS deliveries to 265 million gallons per day (mgd) in normal water years.</p> <p>Specifically, as part of the Phased WSIP Variant, in October 2018, the SFPUC made the unilateral decision to limit the water supply available from the RWS to the BAWSCA member agencies to 184 mgd until at least until 2018. For purposes of water supply planning, BAWSCA has assumed that deliveries from the RWS to the BAWSCA member agencies will</p>	<p>The comment provided general information about the BAWSCA agencies' reliance on the Hetch Hetchy watershed, including information about the SFPUC Regional Water System (RWS) service area and BAWSCA member agencies, water deliveries by the City and County of San Francisco (CCSF), the Water System Improvement Plan (WSIP), level of service goals, and allocations to BAWSCA agencies. This comment does not make a general comment regarding the plan amendments or raise significant environmental issues.</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC RWS service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p> <p>Programmatic planning decisions such as amending the Bay-Delta Plan, may be evaluated at a broad level under the California Environmental Quality Act, because the details that are needed to conduct a project-level analysis are not known and cannot be described in sufficient detail in which to appropriately analyze. The 2016 Recirculated Draft SED is a programmatic document, as is discussed in Master Response 1.1, General Comments, regarding a general description of programmatic documents. The SED programmatically evaluates potential water supply conditions (including during drought conditions) to service providers, including CCSF. Please see Master Response 8.5 regarding the analytical approach and economic considerations specifically related to CCSF, and the programmatic analysis as it relates specifically to CCSF and the SFPUC RWS service area. Master Response 8.5 also addresses potential water supply reductions to SFPUC as a result of implementation of the plan amendments and the actions that SFPUC could take with respect to potential water supply reduction. Please see Appendix L, City and County of San Francisco Analyses, Chapter 13, Service Providers, and Chapter 20, Economic Analyses for more information related to CCSF impacts and economic considerations related to CCSF.</p> <p>SFPUC also submitted comments expressing concern about water supply impacts to the SFPUC RWS service area. To the extent the comments contained in this letter reference SFPUC comments or analyses, or are similar to comments contained in the SFPUC letter, please refer to letter 1166 to review responses to that letter.</p>

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		<p>not be in excess of 184 mgd, through 2040. This assumption is consistent with what the SFPUC has stated in public documents. [Footnote 6: San Francisco Public Utilities Commission, Draft May 2016 2040 WaterMAP: A Water Management Action Plan for the SFPUC, (May 2016) at p. 4.]</p> <p>In October 2008, SFPUC adopted an 80 percent level of service (LOS) goal for the RWS. Based on the drought allocation formula used in the 2009 Water Supply Agreement between San Francisco and the BAWSCA Wholesale Customers (Attachment H, Water Shortage Allocation Plan, the "Tier 1 Plan"), assuming a full system demand of 265 mgd (184 mgd for the Wholesale Customers), a drought event that creates a 10 percent RWS shortfall corresponds to an average 17 percent cutback to the Wholesale Customers, in aggregate, while a 20 percent system-wide shortfall corresponds to an average 28 percent cutback to Wholesale Customers. [Footnote 7: See Declaration of Matt Moses in Support of Comments by the City and County of San Francisco to the Draft Substitute Environmental Document in Support of Potential Changes to the Bay-Delta Plan (Moses Decl.), attached as Appendix 2, see Attachment 1 to the Moses Decl., SFPUC Analysis of Proposed Changes to Tuolumne River Flow Criteria, Matt Moses, P.E., Water Resources Engineer, San Francisco Public Utilities Commission, March 2017 (referred to as "SFPUC Analysis of Changes to Flow Criteria"), Table 2 at p. 10; see also Water Supply Agreement Between The City And County Of San Francisco And Wholesale Customers In Alameda County, San Mateo County And Santa Clara County, July 2009 (WSA), Attachment H, "Water Shortage Allocation Plan," hereafter referred to as the "Tier 1 Plan," available at https://sfwater.org/modules/showdocument.aspx?documentid=8632.]</p> <p>In addition, the allocation varies for each BAWSCA member agency (i.e., under a 20 percent system-wide shortfall, some agencies could receive a cutback of up to 40 percent to their RWS supply, while some receive less than the 28 percent cutback). [Footnote 8: BAWSCA Phase II Final Report at p. 2-8, available at http://bawasca.org/uploads/userfiles/files/BAWSCA_Strategy_Phase_II_Final_Report_Feb_2015.pdf] Lastly, the existing drought allocation plans apply to shortages of up to 20 percent system wide, due to a recognition of the severe impacts among communities in cases of shortages that exceed 20 percent. The drought plan allows for the parties to agree to adjustments to the drought allocation plan in such a circumstance.</p> <p>Based on the information presented in BAWSCA's 2015 Long-Term Reliable Water Supply Strategy Phase II Final Report (Phase II Final Report), the drought year water supply needs for the BAWSCA member agencies in 2040, with 20 percent shortage conditions on the RWS, is anticipated to be 43 mgd, which corresponds to a 26 percent shortage to the Wholesale Customers, in aggregate. [Footnote 9: BAWSCA Phase II Final Report at p. 2-8.] The results presented in the Phase II Final Report assume that only RWS supplies are impacted and there is no shortage on agencies' other supplies.</p> <p>This assumption is incorrect as proven during the most recent/current drought. For example, State Water Project (SWP) supplies were also cutback (5% allocation was unprecedented) concurrent with the cutbacks on the RWS, this resulted in certain BAWSCA member agencies relying more heavily on the RWS supplies, which in turn impacted the rest of the BAWSCA member agencies. Moreover, under drought conditions where the alternative flows proposed in the 2016 Draft SED impact water supplies from the LSJR, local water supplies that are part of the RWS, as well as individual BAWSCA agencies alternative water supplies, will also be negatively impacted by a drought.</p>	

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1191	5	[ATT2: Figure 2: San Francisco Regional Water System Map.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	6	[ATT3: Figure 3: BAWSCA Fiscal Year 2014-15 Total Water Use by Source.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	7	[ATT4: Figure 4: BAWSCA Projected Fiscal Year 2040-41 Total Water Use by Source.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	8	<p>The SED alternative flows will have a significant impact on BAWSCA.</p> <p>LSJR Alternatives 2, 3, and 4 in the 2016 Draft SED include an unimpaired flow range, (i.e., 20 percent, 40 percent, and 60 percent respectively), between February and June, all of which would have a severe impacts on the RWS. The 2016 Draft SED defines "[u]nimpaird flow" as "the flow that would accumulate in surface waters in response to rainfall and snowmelt, and flow downstream if there were no reservoirs or diversions to change the quantity, timing, and magnitude of flows." [Footnote 10: 2016 Draft SED at p. 3-5.]</p> <p>When compared to the baseline, the results show that increased instream flow requirements on the Lower Tuolumne River potentially required as a result of water quality certification associated with FERC relicensing, and required under Phase 3 of the SED proposed to implement the Bay-Delta Plan changes through water rights actions, would have the greatest impact on CCSF water supply during a drought. The flow requirements would also negatively impact the water bank account balance at New Don Pedro Reservoir. Reductions in the water bank account balance are replenished in average years; however, the results show that during multi-year droughts the balance is further diminished under the LSJR Alternatives. [Footnote 11: 2016 Draft SED, Appendix L, at p. L-20.]</p> <p>Specifically, implementation of LSJR Alternatives 3 or 4 would cause severe water shortages in the RWS service territory during a sequential year drought. [Footnote 12: See SFPUC Analysis of Changes to Flow Criteria Tables 2-4 at pp. 10 -12; See also Tier 1 Plan, available at https://sfwater.org/modules/showdocument.aspx?documentid=8632] The 2016 Draft SED estimates that, assuming a reoccurrence of 1987-1992 hydrology at a 2010 baseline RWS demand of 226 mgd [Footnote 13: 2016 Draft SED, Appendix L, at p. L-5.], the average annual additional water supply reduction CCSF could experience if the State Board implemented a 40 percent unimpaired flow objective on the Tuolumne River would be 119,000 AF/year for each year of a 6-year drought. [Footnote 14: 2016 Draft SED, Appendix L, at p. L-21, Table L.4-2.]</p> <p>However, the water supply reduction to the RWS, as calculated by the SFPUC water supply operations models, would be far greater. [Footnote 15: SFPUC Analysis of Changes to Flow Criteria, Table 3 at p. 11.] In addition, the supply available to the Wholesale Customers under the Tier 1 Plan would be a subset of the total available to the RWS. [Footnote 16: See Tier 1 Plan.]</p> <p>Per the SFPUC's analysis, under a 40 percent unimpaired flow objective, the RWS supply would be reduced by 129,884 AF/year for each of the 6 years, resulting in a loss of an additional 10,884 AF/year, or 65,304 AF in total for the 6-year period beyond the water supply reduction identified in the 2016 Draft SED. [Footnote 17: SFPUC Analysis of Changes to Flow Criteria, Table 3 at p. 11.] Figures 5 [ATT5] and 6 [ATT6] illustrate the reductions in RWS supply for the Wholesale Customers during a repeat of the historic 6-year drought</p>	<p>Please see response to comment 1191-4 regarding the adequacy of the approach to the analysis, and the programmatic nature of the environmental impact analysis. In addition, Appendix L, City and County of San Francisco Analyses, generally describes how CCSF's (SFPUC's) water supply could be affected by the LSJR flow objectives; quantifies the potential water supply effects on CCSF based on two different interpretations of how the Fourth Agreement could affect CCSF's responsibility to contribute to instream flows if new flow objectives are imposed as a condition of water quality certification associated with the Federal Energy Regulatory Commission relicensing process for the New Don Pedro Project; describes actions CCSF could take to meet water supply demand if supplies are reduced; and, summarizes the potential economic effects of water supply changes associated with a water transfer. Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding water supply planning and demand management, including conservation and demand hardening. Master Response 8.5 also contains information about relevant water supply effects analyses in the SED and addresses differences between the SED's analyses and SFPUC's analyses of such water supply effects specific to the SFPUC RWS service area.</p> <p>With regard to the comment indicating that LSJR Alternatives 3 or 4 would impact SFPUC's ability to take on San Jose and Santa Clara as permanent wholesale customers with a combined current demand of 9 mgd, it should be noted that San Jose and Santa Clara have been interruptible wholesale customers of SFPUC for at least three decades (see 1984 Settlement Agreement and Master Water Sales Contract, and 2009 Water Supply Agreement). In 2008, requests by the cities of San Jose and Santa Clara to become permanent SFPUC customers were deferred by SFPUC (BAWSCA 2016). As noted in SFPUC's planning documents, SFPUC has planned on continuing to supply water to these cities on a temporary, interruptible basis pending a decision pursuant to Section 4.05 of the Water Supply Agreement, and to date SFPUC has not interrupted or reduced supplies to San Jose or Santa Clara. The decision to grant permanent customer status to San Jose and Santa Clara may be based on many factors (discussed in the SFPUC 2040 WaterMap [SFPUC 2016]) including those that have transpired over three decades, and would likely consider the entire water supply and demand planning portfolio of SFPUC in order to determine if long-term water supplies are available. Thus, SFPUC's water supply decisions, including its decision whether to take on permanent wholesale customers, are dependent on a variety of factors. In the approximately 10 years since the cities' request, and the approximately 30 years since the Settlement Agreement (1984), SFPUC has not granted them permanent status. Although implementation of the plan amendments could result in water supply reduction to SFPUC, the plan amendments are not the sole factor affecting SFPUC's decision of whether or not to grant permanent customer status to these cities.</p>

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		<p>sequence for three unimpaired flow objectives presented in the 2016 Draft SED for two different demand scenarios.</p> <p>Assuming the full system demand of 265 mgd, this reduction in RWS supply would result in a 46 percent reduction in deliveries to Wholesale Customers for the first year of the drought, and a 59 percent reduction in deliveries in each of the subsequent 5 years. (See Figure 6 [ATT6]). Further, using the same assumptions and level of demand, under a 50 percent unimpaired flow objective, the deliveries to the Wholesale Customers would be cutback by 72 percent in each of the 6 years of the drought. In addition, in this scenario, drought cutbacks would be three times as frequent as the current, base case conditions in the RWS. [Footnote 18: SFPUC Analysis of Changes to Flow Criteria, Table 2 at p. 10; Tier 1 Plan.]</p> <p>Shortages to the Wholesale Customers would also be significant when current (pre-drought) deliveries are assumed. (See Figure 5 [ATT5]). For example, using system-wide annual deliveries of 223 mgd, which is equivalent to Fiscal Year 2012-2013 RWS demand, if a 40 percent unimpaired flow objective were implemented on the Tuolumne River, the RWS deliveries to the Wholesale Customers would be cutback by 43 percent during the first 3 years of the drought, followed by 52 percent reductions in deliveries for the next 3 years. Using the same assumptions and level of demand, implementation of a 50 percent unimpaired flow objective on the Tuolumne River would lead to cutbacks to the BAWSCA agencies of 64 percent in each of the 6 years of the drought. [Footnote 19: See SFPUC Analysis of Changes to Flow Criteria, Table 3 at p. 11; Tier 1 Plan.]</p> <p>BAWSCA member agencies did an exceptional job at conserving water during the recent drought, achieving an overall savings of 27 percent in Fiscal Year 2015-2016, as compared to 2013. Even using this level of reduced water use of 175 mgd in the RWS service territory during the recent drought, high levels of rationing would still be required under the SED. Using the same set of assumptions, if the State Board implemented a 40 percent unimpaired flow objective on the Tuolumne River, the deliveries to Wholesale Customers would be reduced by a further 21 percent during the first 3 years of the drought, and followed by 33 percent cutbacks in the next 3 years.</p> <p>In this scenario, a 50 percent unimpaired flow objective would lead to a cutback of deliveries to the Wholesale Customers of an additional 40 percent in the first 3 years of the drought, and by 62 percent in the next 3 years. [Footnote 20: See SFPUC Analysis of Changes to Flow Criteria, Table 4 at p. 12; Tier 1 Plan.] Demand hardening from past conservation efforts would lessen the effect of additional conservation, thereby increasing the overall impacts from the proposed water supply reductions.</p> <p>The 2016 Draft SED acknowledges the impacts to CCSF's water supply but insufficiently analyzes these impacts. In acknowledgement of impact to the RWS, the 2016 Draft SED states that "[i]t is reasonable to assume . . . that CCSF's water supply from the Tuolumne River could be reduced because (1) SFPUC would have less available water supply to divert under CCSF's water rights, or (2) more flows would be released to comply with the irrigation districts' FERC license, potentially leaving SFPUC with less water." [Footnote 21: 2016 Draft SED, Appendix L, p. L-22.] The Draft 2016 SED identifies three "potential actions SFPUC could take to replace reductions in water supply resulting under the LSJR Alternatives: (1) Water transfer; (2) In-Delta diversion(s); and (3) Water supply Desalination Project." [Footnote 22: 2016 Draft SED, Appendix L, p. L-22.] Yet, the Draft 2016 SED concedes the specific ultimate effect on CCSF's water supply cannot be determined. [Footnote 23: 2016 Draft SED, Appendix L, p. L-1.] Specifically, the 2016 Draft SED concedes that "the largest uncertainty</p>	

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		<p>involves how water supply for the CCSF and other areas served by the [SFPUC] could be affected." [Footnote 24: 2016 Draft SED, Executive Summary, at p. ES-29.]</p> <p>Imposition of LSJR Alternatives 3 or 4 also impacts the SFPUC's ability to take on San Jose and Santa Clara as permanent wholesale customers with a combined current demand of 9 mgd. Currently, San Jose and Santa Clara are temporary, interruptible customers of the SFPUC under the 2009 Water Supply Agreement. In order to make San Jose and Santa Clara permanent customers, the SFPUC would need to develop water supplies to enable them to provide permanent individual supply guarantees to the two cities. The significant water supply reductions that would occur to the RWS and the probability of SFPUC not being able to meet the 184 mgd water supply assurance to the wholesale customers under the LSJR Alternatives 3 or 4 would have to be considered by the SFPUC before permanent status was granted to the cities.</p> <p>Overall, the SED proposes substantial changes to flow objectives for the Tuolumne River. These changes are anticipated to result in reduced surface water available for diversions, thereby causing significant, potentially unavoidable impacts to water supply. These significant impacts to water supply would lead to significant rationing of the water supply available to the BAWSCA member agencies during droughts.</p>	
1191	9	[ATT5: Figure 5: Wholesale Customer Cutback Percentage at Current (Pre-Drought) Demands of 223 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	10	[ATT6: Figure 6: Wholesale Customer Cutback Percentage at Full System Demands of 265 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	11	BAWSCA supports the objectives of the Bay-Delta Plan to protect water quality in the Bay-Delta Water Quality Control Plan for humans, fish, and other wildlife.	Please refer to Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.
1191	12	The 2016 Draft SED fails to adequately analyze the impacts the Bay Area and BAWSCA's member agencies who provide water originating in the Tuolumne River to 1.78 million customers. LSJR Alternatives 2, 3, and 4 in the 2016 Draft SED include an unimpaired flow range, (i.e., 20 percent, 40 percent, and 60 percent respectively), between February and June, which would cause water shortages to the RWS and would have a severe impacts on the RWS which are not adequately analyses in the SED.	Please refer to Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the effects of the plan amendments on the water supply for the SFPUC RWS service area, potential responses to water supply reduction, and economic and social effects of water shortages, including those associated with rationing of deliveries, in the SFPUC RWS service area. Please also refer to Master Response 1.1, General Comments, for general information about the approach to analyses and adequacy of the SED.
1191	13	<p>The Draft 2016 SED fails to consider and analyze the reasonably foreseeable actions of the BAWSCA member agencies as provided in their publically available Urban Water Management Plans; including:</p> <ul style="list-style-type: none"> -Increased reliance on groundwater, surface water supplies, and imported water; -Inability to conserve additional water as a result of past conservation efforts and demand hardening; and -Severe rationing and moratoriums on new development. 	<p>Please see response to comment 1191-4 regarding the approach to the analysis, the programmatic nature of the analysis, and the substantial evidence standard. Master Response 1.1 also contains information about compliance with CEQA, including with Public Resources Code section 21159, and the approach to analyses and the substantial evidence standard. Please also see response to comment 1191-8 regarding the SED analysis related to SFPUC (CCSF).</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding water supply planning, including conservation and demand hardening and a review of urban water management plan. Furthermore, as discussed in Master Response 8.5, the State Water Board identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies.</p> <p>The SED evaluates the types of physical actions and the impacts that may result from implementation of the plan amendments to the extent reasonably feasible and without engaging in speculation. For example, in</p>

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			<p>Chapter 16, the SED identifies general categories of actions that the affected entities may take in response to reduced surface water supplies and the resulting impacts that are reasonably foreseeable, including impacts associated with water transfers, groundwater substitution, and development of recycled water, in-Delta diversions, and desalinization. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions, such as those described in Chapter 13, 20 and Appendix L, to replace any reductions in water supplies with alternative sources, such as through water transfers. As detailed in Master Response 8.5, SFPUC already employs rationing as a demand management strategy, which is described in the UWMP, as part of the Retail Water Shortage Allocation Plan, which pertains to retail customers, and their Water Shortage Allocation Plan Among Suburban Customers, which pertains to wholesale customers. The different levels of rationing that have been previously used and are described in the UWMP would not result in the severe rationing assumed and described by SFPUC or the commenter.</p> <p>Finally please see Master Response 8.5 for a discussion on the effects of the plan amendments on regional growth and housing development.</p>
1191	14	The 2016 Draft SED fails to adequately analyze the reasonably foreseeable reduction in the water supplies and the resulting significant impact on the Bay Area's economy	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p> <p>Please see Master Response 1.1, General Comments, for information regarding the adequacy of the SED and the programmatic level of analysis. The analysis in the SED acknowledges that there could be economic effects to SFPUC as well as the ratepayers of their service area depending on the other indirect action(s) implemented to accommodate a potential water supply reduction (see Appendix L, City and County of San Francisco; Chapter 20, Section 20.3.3, Effects on Municipal and Industrial Water Supplies and Affected Regional Economies, M&I Water Supply Conditions in the SFPUC Service Area and Potential Cost, Ratepayer and Regional Economic Effects; and Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.2.5, In-Delta Diversions, and Section 16.2.6 Water Supply Desalination).</p>
1191	15	The 2016 Draft SED impermissibly assumes that the significant water supply impacts to the RWS service territory that would result from imposition of LSJR Alternatives 3 and 4 could be completely mitigated by CCSF's development and/or procurement of the replacement water supplies identified in the 2016 Draft SED. Specifically, based on BAWSCA's experience, it is unreasonable to assume a Delta transfer can be completed to supply the volume of water necessary to reduce water supply impacts and at the costs presented in the 2016 Draft SED.	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p>

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			<p>Further, see Master Response 1.1, General Comments, for information regarding the adequacy of the SED and the substantial evidence standard. Also see Master Response 8.5 for a discussion of uncertainty at the programmatic level of analysis. The SED appropriately evaluates and discloses the significant environmental impacts associated with changes in river flows and water supplies on a programmatic level. The SED, however, cannot describe or provide precise details on actions that an agency may take to comply with the LSJR flow objectives or to reduce potential water supply effects.</p> <p>As indicated in Chapter 13, Service Providers, Chapter 16, Evaluation of Other Indirect and Additional Actions, and Appendix L, City and County of San Francisco Analyses, service providers (e.g., SFPUC) may choose any approach described in Chapter 16, or a combination of approaches, or they may identify another as-yet unknown approach to meet their own unique needs. The analysis in the SED did not assume that any single action described in Chapter 16 would replace the entire reduction in surface water to SFPUC due to implementation of the LSJR alternatives.</p>
1191	16	<p>The 2016 Draft SED fails to adequately analyze increasing Bay Area population growth and housing needs, the impacts from displaced low-density growth, and the environmental costs of forgoing smart growth development.</p>	<p>Please see Master Response 6.1, Cumulative Analysis, regarding the growth inducement analysis and development of housing. Please also refer to Master Response 8.4, Non-Agricultural Economic Considerations, and Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding growth and development in the plan area and the SFPUC RWS service area.</p>
1191	17	<p>Prior to adopting the 2016 Draft SED as a state regulatory program, the State Board must perform an environmental analysis that identifies all significant or potentially significant adverse environmental effects and include an analysis of the reasonably foreseeable environmental impacts, reasonably foreseeable mitigation measures, and reasonably foreseeable alternative means of compliance. [Footnote 25: Pub. Resources Code, §§ 21159, subd. (a)(1)-(3), 21159.2; Cal. Code Regs., tit. 23, § 3777.]</p> <p>The CCSF SED Comments includes a comprehensive alternative (SFPUC Alternative) focusing on improving fish populations while better protecting water supply reliability. The SED analysis must "take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites." [Footnote 26: Pub. Resources Code, § 21159(c); Cal. Code Regs., tit. 14, § 15187.] However, the 2016 Draft SED is not supported by substantial evidence, does not consider all reasonably foreseeable impacts, and should not be adopted by the State Board.</p>	<p>Please see response to comments 1191-4 and 1191-13 regarding the State Water Board's compliance with CEQA, the approach to the analysis and compliance with Public Resources Code section 21159. Please also see Master Response 1.1, for a discussion regarding mitigation measures. Please see Chapter 18, Summary of Impacts and Comparison of Alternatives, for a discussion of the potentially significant environmental impacts associated with different alternatives, methods of compliance, and other indirect actions. Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for a discussion of the SFPUC Alternative.</p>
1191	18	<p>The 2016 Draft SED must also comply with the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). In particular, the State Board must consider a number of factors in establishing the water quality objectives contained in the 2016 Draft SED, including but not limited to "(a) [p]ast, present, and probable future beneficial uses of water[;] (b) [e]nvironmental characteristics of the hydrographic unit under consideration, including the equality of water available thereto[;] (c) [w]ater quality conditions that could reasonably be achieved through coordinated control of all factors which affect water quality in the area[;] (d) [e]conomic conditions[;] and (e) the need for developing housing within the region." [Footnote 27: Wat. Code, § 13241.]</p> <p>Moreover, under the Porter-Cologne Act, the State Board must "consider costs of compliance" when establishing water quality conditions. [Footnote 28: City of Burbank v. State Water Resources Control Bd. (2005) 35 Cal.4th 613, 623 [26 Cal.Rptr.3d 304, 310, 108 P.3d 862, 867].] However, the State Board failed to comply with the Porter-Cologne Act in establishing the water quality conditions under the 2016 Draft SED.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, which provide information on the relevant authorities in this water quality control planning process, including compliance with the Porter Cologne Water Quality Control Act. Please refer to Master Response 1.2 for information regarding compliance with Water Code section 13241, including the statute's requirement to take into account economic considerations.</p>

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1191	19	<p>The 2016 Draft SED is inadequate because it entirely fails to analyze the reasonably foreseeable actions of the individual BAWSCA member agencies in response to reduced availability of water.</p> <p>The 2016 Draft SED fails to consider all reasonably foreseeable environmental impacts, mitigation measures, or alternative means of compliance. [Footnote 29: Pub. Resources Code, § 21159; Cal. Code Regs., tit. 23, § 3777; Cal. Code Regs., tit. 14, § 15187.] Most notably, the State Board entirely failed to account for the reasonably foreseeable actions of the 26 BAWSCA agencies in response to the reduced available water supplies and increased costs to the RWS attributable to the decreased flows proposed in the 2016 Draft SED. While the 2016 Draft SED concedes that impacts to municipal service providers must be analyzed [Footnote 30: 2016 Draft SED, at p. 13-49 ("While substantially reducing existing surface water supplies of service providers can be considered an impact, the extent to which service providers are affected is a function of their ability to use existing alternative supplies (e.g., groundwater) or develop alternative water supplies.")], it failed to actually analyze such impacts to CCSF and its wholesale customers, the BAWSCA member agencies. [Footnote 31: 2016 Draft SED, Executive Summary, at p. ES-29, (State Board expressly concedes that "the largest uncertainty involves how water supply for the CCSF and other areas served by the [SFPUC] could be affected.")]</p> <p>Rather, the 2016 Draft SED only considers CCSF's potential actions in response to decreased flows to meet water supply demand [Footnote 32: 2016 Draft SED, Appendix L, at p. L-5.], including a water transfer between SFPUC and the irrigation districts [Footnote 33: Draft SED, Appendix L, at p. L-22-L-23], in-Delta diversion by SFPUC [Footnote 34: 2016 Draft SED, Appendix L, at p. L-23-L-24.] and a SFPUC desalination project. [Footnote 35: 2016 Draft SED, Appendix L, at p. L-24-L-25.] These actions are not reasonably foreseeable and not likely to occur.</p> <p>The State Board has a statutory obligation to carefully evaluate the recommendations of concerned local agencies during the process of formulating or revising state policy for water quality control. [Footnote 36: Wat. Code, § 13144 ("During the process of formulating or revising state policy for water quality control the state board shall consult with and carefully evaluate the recommendations of concerned federal, state, and local agencies.")] Without considering the reasonably foreseeable impacts, mitigation measures, or alternative means of compliance of the BAWSCA agencies independent from CCSF, the 2016 Draft SED is inadequate and the impacts analysis is not supported by substantial evidence, or reasonable inferences predicated on fact. [Footnote 37: Pub. Resources Code, § 21159, subd. (c).]</p>	<p>Chapter 16, Evaluation of Other Indirect and Additional Actions, appropriately presents analyses of the costs and environmental impacts associated with reasonably foreseeable actions that agencies could take to reduce potential reservoir or water supply effects associated with implementing LSJR Alternatives 2, 3, and 4. These reasonably foreseeable actions include water recycling, water transfers, substitution of surface water with groundwater, and desalination. Please see the response to comment 1191-4 and 1191-13, including for information about the programmatic analyses in the SED.</p>
1191	20	<p>The SED did not consider the BAWSCA agencies' urban water management plans, which represent the reasonably foreseeable actions of BAWSCA agencies in responding to decreased supply.</p> <p>Under the Urban Water Management Planning Act, many BAWSCA agency must prepare an Urban Water Management Plan (UWMP) for submittal to the Department of Water Resources (DWR) every five years. [Footnote 38: Wat. Code, § 10610 et seq.] The UWMPs provide the long-term resource planning of each agency and ensure that adequate water supplies are available to meet existing and future needs. [Footnote 39: Wat. Code, §§ 10610.2, 10610.4.] Not only are such plans publicly accessible, the DWR must actively review the submitted plans to ensure compliance with the Water Code and report out to the Legislature on the status of California's planning efforts.</p>	<p>Please see response to comment 1191-13. In addition, the comment asserts that the 2016 Draft SED fails to assess the significant environmental impacts, but the comment does not identify any impacts. To the extent the comments contained in this letter reference SFPUC comments or analyses, or are similar to comments contained in the SFPUC letter, please refer to letter 1166 to review responses to that letter.</p>

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		<p>In analyzing the impacts of the proposed water shortages identified in the 2016 Draft SED, the State Board should have considered those reasonably foreseeable actions of the BAWSCA agencies as presented in the UWMP and failure to do so renders the analysis inadequate as it is not based on substantial evidence. [Footnote 40: See Chawanakee Unified School Dist. v. County of Madera (2011) 196 Cal.App.4th 1016, 1029, as modified on denial of reh'g (July 19, 2011) [EIR failed to consider reasonably foreseeable impacts of construction on the physical environment beyond the school facilities]; see also County Sanitation Dist. No. 2 of Los Angeles County v. County of Kern (2005) 127 Cal.App.4th 1544, 1586 [27 Cal.Rptr.3d 28, 57] ["Predicting the physical changes a project will bring about is an inescapable part of CEQA analysis."]; see also Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, 919, as modified on denial of reh'g (Oct. 16, 2000) ["CEQA does compel reasonable forecasting."]; Pub. Resources Code, § 21168.5.]</p> <p>Specifically, the 2016 Draft SED fails to assess the significant environmental impacts that would result if the CCSF were compelled to drastically reduce water deliveries throughout the RWS service territory in response to the State Board's implementation of a 30, 40 or 50-percent unimpaired flow objective on the Tuolumne River. This critical omission constitutes an abuse of discretion because the 2016 Draft SED failed to proffer any justification for why these impacts are not significant under CEQA, and, in fact failed to present any analysis whatsoever regarding such impacts. [Footnote 41: Pub. Resources Code, § 21168.5 [explaining that standard for judicial review of non-adjudicative decisions involving CEQA "shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence."]; Pub. Resources Code, § 21100, subd. (b)(1) [requiring lead agencies to prepare EIR for any project that they propose to carry out or approve that may have a significant effect on the environment that includes a detailed statement setting forth "[a]ll significant effects of the proposed project."]; Pub. Resources Code, § 21159, subd. (a)(1) [requiring agencies to perform environmental analysis at time of adoption of performance standard that must include "[a]n analysis of the reasonably foreseeable environmental impacts of the methods of compliance"; Cal. Code Regs., tit. 23, § 3777, subd. (b)(2) [requiring that a draft SED prepared by the State Board include "identification of any significant or potentially significant adverse environmental impacts of the proposed project."].]</p>	
1191	21	<p>BAWSCA agencies would respond to water shortages with foreseeable actions that were not adequately analyzed in the SED.</p> <p>The 2016 Draft SED assumes that the only impact to the BAWSCA agencies would be economic costs of securing additional water supplies as a result of shortages; CCSF would pass through its costs to BAWSCA agencies for obtaining an alternative supply. Specifically, the Draft 2016 SED assumes in the regional impact assessment that CCSF would pass the costs to its retail customers in the form of a temporary rate surcharge and to its wholesale customers, i.e., BAWSCA agencies, in the form of higher wholesale water rates. In turn, Wholesale Customers must pass their higher costs to their retail customers through a temporary rate surcharge. [Footnote 42: 2016 Draft SED, Appendix L, at p. L-28.]</p> <p>What the SED failed to consider is that the BAWSCA agencies would not necessarily purchase water at an increased cost from CCSF. Instead, the BAWSCA agencies reasonably foreseeable actions, as put forth in the UWMPs submitted to the DWR, include taking other</p>	<p>Please see responses to comments 1191-13 and 1191-20.</p> <p>Please see Master Response 8.0, Economic Analyses Framework and Assessment Tools, regarding the scope of the economic analyses conducted for the SED.</p> <p>In addition, see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the potential water supply reductions to CCSF as a result of implementation of the plan amendments, actions that SFPUC could take to meet demands within the service area if water supplies are reduced, and use of groundwater. The master response also identifies areas where the SED discusses actions that agencies may take in response to reduced water supplies, and related environmental impacts, such as water transfers, water recycling, and desalination.</p>

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		<p>steps to avoid the increased cost, such as fully utilizing local supplies (e.g., surface water and groundwater) and finding alternative, less costly supplies than what CCSF could offer. Already about one-third of the BAWSCA agencies' supply is from alternative sources outside of CCSF's RWS, including water recycling, local groundwater and desalination. Figure 3 [ATT3] illustrates the BAWSCA agencies water supply portfolio for Fiscal Year 2014-2015 and Figure 4 [ATT4] illustrates the projected water supply sources going forward. Reliance on alternate supplies would increase as a result of the reduced flows proposed in the Draft SED.</p> <p>Figure 7 [ATT7] summarizes the BAWSCA agencies' foreseeable responses to a water shortage derived from the UWMPs, which should have been considered in the 2016 Draft SED.</p> <p>-At least 9 BAWSCA agencies [Footnote 43: ACWD, Daly City, East Palo Alto, Milpitas, San Bruno, Santa Clara, Sunnyvale, Stanford, as stated in 2016 Draft SED comment letters; Palo Alto, per 2015 UWMP.] would increase reliance on local groundwater, increasing the probability for groundwater basin overdraft, saltwater intrusion, and land subsidence.</p> <p>-Two BAWSCA agencies [Footnote 44: Coastside CWD and Stanford, as stated in 2016 Draft SED comment letters.] would rely on more local surface water supplies, which could be greatly depleted or completely unavailable during times of drought.</p> <p>-Two BAWSCA member agencies [Footnote 45: ACWD and Hayward, as stated in 2016 Draft SED comment letters.] would seek to acquire new water supplies.</p> <p>-Many BAWSCA member agencies would implement a development (e.g. "no new hook up") moratorium which would cause economic impacts and impacts from displaced growth and urban sprawl.</p> <p>More specifically, the 2016 Draft SED fails to analyze the environmental impacts that would result from increased reliance on the existing local water supply of the BAWSCA agencies as well as other foreseeable responses to reduced flows. As can be seen from Figure 3 [ATT3], the BAWSCA agencies already have a diverse supply portfolio, including water recycling, local groundwater and desalination. Increased utilization and reliance on these alternative sources could have negative environmental impacts, and such impacts were not analyzed. The 2016 Draft SED entirely fails to consider any impacts that would result from BAWSCA agencies increased reliance on local supply.</p> <p>Two BAWSCA agencies include in their UWMPs developing or utilizing currently unused local groundwater supplies, under water supply shortages predicted by the alternative flows in the 2016 Draft SED. For example, the City of Palo Alto currently sources 100% of its potable water supply from the RWS, but maintains a network of emergency wells that could be utilized in the event of a drought. The use of groundwater by Palo Alto in the event of a drought could cause undesirable effects to the groundwater basin, such as overdraft, subsidence, and sea water intrusion. Other agencies, such as the City of Santa Clara and the City of Sunnyvale, use local groundwater as a part of their supply, and in the event that supplies from the RWS were drastically cutback, those agencies could be compelled to use significantly more groundwater, potentially leading to undesirable effects in the groundwater basin. These foreseeable impacts, even if indirect, must be analyzed by the SED.</p>	

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		<p>Financing alternative supplies is a significant endeavor, as evidenced by, Alameda County Water District (ACWD), which has invested over \$100M in innovative alternative water supplies and water management practices including brackish groundwater desalination, water use efficiency, conjunctive use groundwater recharge facilities, and off-site groundwater banking. [Footnote 46: See ACWD Comment Letter on the 2016 Draft SED.] ACWD has also made significant investments to enhance its operation on Alameda Creek, a source of local surface water, for the restoration of steelhead (<i>Oncorhynchus mykiss</i>) fishery. [Footnote 47: See ACWD Comment Letter on the 2016 Draft SED.] Those expenditures are significant, yet much greater investment would be required of ACWD if the SED moved forward as proposed.</p> <p>In addition to putting additional stress and impacting local water supplies as a result of shortages, BAWSCA and its member agencies will likely look at potential water transfers and imported water supplies to make up the deficiency in the RWS. BAWSCA has authority to purchase and transfer water [Footnote 48: Wat. Code, § 81420.] and has considered water transfers in the past to address short-term drought reliability and long-term water needs. We provide a detailed description of BAWSCA's past efforts to transfer water into the RWS and the multitude of issues that arise with such a transfer.</p> <p>Likewise, ACWD has imported water supplies from the SWP and has effectuated transfers in the past. ACWD has indicated that, as a result of the potential reduction in water supply resulting from the SED, it will deplete its groundwater bank in Semitropic requiring the need to acquire new additional water supplies for purposes of banking to ensure reliable supplies during droughts. [Footnote 49: See ACWD Comment Letter on the 2016 Draft SED.] Yet, the 2016 Draft SED fails to analyze the environmental impacts resulting from BAWSCA or any member agencies' purchase and transfer of water supplies. Further, the SED fails entirely to consider competition, including competition with CCSF, for any available supplies and for the use of available capacity in facilities to provide water to the Bay Area.</p>	
1191	22	[ATT7: Figure 7: BAWSCA Agencies' Foreseeable Responses to 50 Percent Shortages.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	23	<p>BAWSCA agencies already conserve the maximum amount of water.</p> <p>The 2016 Draft SED does not take into account the water conservation efforts already in place for BAWSCA agencies. The 2016 Draft SED would have severe consequences given the BAWSCA member agencies may not be able to conserve beyond the existing levels. Moreover, the 2016 Draft SED fails to analyze the limited, additional yield available from increased water efficiency, conservation efforts to already low per capita water usage throughout the RWS service territory, and the effect of demand hardening.</p> <p>Specifically, BAWSCA member agencies have implemented various conservation programs resulting in dramatic water conservation for the region. For example, BAWSCA's Regional Water Conservation Program ("Conservation Program") assists the member agencies in meeting water efficiency goals and supports supply reliability for the agencies' customers through a range of regional water conservation measures and initiatives. The Conservation Program includes a core program for general landscape education, water-wise gardening website, and public information and a subscription program funded by the participant agencies.</p> <p>The subscription program includes rebates for high-efficiency toilets, clothes washers, turf</p>	Please see response to Comment 1191-8 regarding past conservation efforts, potential responses to water supply reductions, and demand hardening.

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		<p>replacement, and rain barrels; free high-efficiency sprinkler nozzles; indoor and outdoor water-efficient fixture giveaways; three school education programs; residential water use reports; and large landscape audits. Since Fiscal Year 2001-2002, BAWSCA's Regional Water Conservation Program has expended a total of \$10,674,530 on water conservation actions. [Footnote 50: Bay Area Water Supply & Conservation Agency, BAWSCA Annual Water Conservation Report: FY 2014-2015, available at http://bawasca.org/uploads/userfiles/files/FY14-15_BAWSCA%20WCP%20Annual%20Report.pdf (hereinafter "BAWSCA FY 2014-15 Annual Survey").]</p> <p>In addition, BAWSCA member agencies directly implement a variety of water conservation measures outside of BAWSCA's conservation programs and 8 agencies implement conservation programs through the Santa Clara Valley Water District ("SCVWD"). These include measures similar to those offered in the BAWSCA Regional Water Conservation Program as well as rebates for irrigation equipment upgrades, graywater systems, commercial upgrades, high-efficiency urinals, and submeters; household water audits; and individual household water budgets.</p> <p>The collective effect of these conservation efforts renders the BAWSCA member agencies among the most efficient water users in California. Despite increasing population growth in the Bay Area, total water use and BAWSCA member agency wholesale purchases from the RWS have remained flat.</p> <p>Figure 8 [ATT8] illustrates that even prior to the recent drought, the BAWSCA service area water use decreased by 14% from 1987 to 2013, despite a 23% population increase. [Footnote 51: BAWSCA FY 2014-15 Annual Survey.] Since 1986, the residential per capita use decreased 36 percent, from 101.5 gallons per capita per day (GPCPD) in Fiscal Year 1985-1986 to 79 GPCPD in Fiscal Year 2012-2013, which was the last fiscal year before drought rationing occurred.</p> <p>Figure 9 [ATT9] illustrates the decline in per capita water use in the BAWSCA service area through time. Residential per capita use was a very low 64.8 GPCPD in Fiscal Year 2014-2015, due to the mandatory rationing imposed in response to State and local conditions. [Footnote 52: BAWSCA FY 2014-15 Annual Survey.]</p> <p>With regard to the recent conservation efforts triggered by the drought, Figure 10 [ATT10] illustrates that during the 12-month period for which the State-assigned conservation standards were in effect, BAWSCA agencies achieved a 27 percent reduction in total water use compared to the same months in 2013, saving 23.0 billion gallons or 166 percent of their 15 percent collective savings target. By comparison, total statewide reduction in water use for the 12-month period was 24.5 percent, and the total statewide reduction target was 25 percent. [Footnote 53: State Water Resources Control Board, Statewide Water Conservation Grows to 28 Percent in May; Urban Water Suppliers 'Stress Test' Data Under Review (July 6, 2016) available at http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/2016jul/pr070616.pdf.]</p> <p>Figure 11 [ATT11] illustrates the average residential per capita use in the BAWSCA service area as compared with the average residential per capita use within the State of California overall and the Bay Area overall. Information depicted on Figure 11 applies to the state</p>	

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		<p>mandated conservation period from June 2015 through May 2016.</p> <p>Figure 12 [ATT12] illustrates the range in per capita usage in individual agencies in the BAWSCA service area during the mandatory conservation period.</p> <p>In addition to its aggressive conservation actions, BAWSCA completed the Regional Water Demand and Conservation Projections Report in 2014 ("Demand Report"), which quantified the passive and active water conservation savings potential for each BAWSCA member agency through 2040. [Footnote 54: Bay Area Water Supply & Conservation Agency, Regional Water Demand and Conservation Projections: Final Report (September 2014) available at http://bawasca.org/uploads/userfiles/files/BAWSCA%20Demand%20and%20Conservation%20Projection%20FINAL%20REPORT.pdf. (hereinafter "BAWSCA Final Report, September 2014").]</p> <p>Passive conservation savings are those achieved from the installation of water-efficient fixtures required by current plumbing code and building code standards. Active conservation savings are those savings achieved through programs implemented and funded at an agency or regional level, such as rebate programs or installation of advanced metering infrastructure. The Demand Report projected that the BAWSCA agencies will achieve an additional 35 mgd of passive and active conservation savings between 2014 and 2040, and this would partially offset water demand increases associated with projected population and employment increases of 27 percent and 31 percent, respectively, over the same period. [Footnote 55: BAWSCA Final Report, September 2014, at p. 5-1 to 5-4.]</p> <p>Specifically, the SED neglected to analyze the hardening of demand in the service area, a resulting effect of the agencies' long term effective and sustained conservation programs. Water conservation activities "harden" demand since they incorporate continuous water savings into baseline demands. Therefore, the next increment of water use reduction becomes significantly more difficult to achieve. Demand hardening makes droughts harder to bear, such that increased rationing may have significant economic and lifestyle impacts. The 2016 Draft SED, as part of the Regional Impact Analysis, indicates that residential customers could decrease water use in response to water price increases. [Footnote 56: 2016 Draft SED at p. L-29.] However, it failed entirely to analyze the impacts resulting from increased reduction of flows in light of demand hardening.</p> <p>Given the BAWSCA agencies' customers' current low water use and the conservation and local supply projects already existing or built into the agencies' projections of demand, as detailed in the Demand Report, it is not feasible for BAWSCA agencies to further reduce demand for RWS water. The 2016 Draft SED is entirely devoid of analysis on whether the region can handle such reduced flows in light of the region's current and projected use, including any analyses of the potential impact.</p>	
1191	24	[ATT8: Figure 8: BAWSCA Population and Water Use 1975 to 2015.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	25	[ATT9: Figure 9: BAWSCA Residential Per Capita Water Use 1975 to 2015.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	26	[ATT10: Figure 10: Cumulative BAWSCA Water Savings Target versus Savings Achieved for	The commenter is providing this attachment for reference purposes in support of their comments. Those

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		June 2015 to May 2016 State Water Resources Control Board Compliance Period.]	comments are addressed in these responses to comments; therefore, no additional response is required.
1191	27	[ATT11: Figure 11: Average Residential Per Capita Water Use by Region June 2015 through May 2016 in Gallons per Capita per Day.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	28	[ATT12: Figure 12: Average Residential Customer Water Uses 60 Gallons per Day in BAWSCA Service Area.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	29	<p>As described in detail in the Comments by the City and County of San Francisco, increased conservation and rationing throughout the RWS would result in significant environmental impacts that the 2016 Draft SED did not analyze, such as negatively impacting greenscapes. [Footnote 57: CCSF SED Comments, Argument I ("The Draft 2016 SED Must Analyze the Environmental and Economic Impacts of the Most Reasonably Foreseeable Method of Compliance by San Francisco: Reductions in Deliveries throughout the RWS service territory for the current and projected population through 2040"), Subsection F ("Increased rationing by San Francisco and throughout the RWS service territory would result in significant environmental impacts that the Draft 2016 SED did not analyze."), pp. 32-37.] The substantial loss in park vegetation, landscaping, and trees resulting from the increased rationing would adversely impact aesthetic and recreational resources, increase the risk of urban wildfires, and adversely impacts to habitat in urban forests and natural areas.</p> <p>That point is of particular concern to some of the BAWSCA member agencies, such as the City of Hillsborough, which has a significant canopy of mature trees and has concerns that limiting water supply could adversely impact that canopy. Similarly, Mountain View noted in their comments to the SED that potential impacts could include loss of landscaping and trees throughout their community. It is reasonable to assume that the loss of trees, vegetation and other landscaping would also exacerbate the effects of urban heat islands, thereby increasing energy consumption for cooling during elevated summertime temperatures and resulting in increased emissions from power plants due to this additional electricity generation.</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers. Given the State Water Board’s determination that the severe rationing anticipated by SFPUC is not reasonably foreseeable, it would be speculative to assume with any degree of certainty how potential increased severe water rationing and water use restrictions would affect park vegetation, urban forests (including tree loss), and other landscaping, and thus aesthetics and recreational resources, increase the risk of urban wildfires, or create urban heat islands.</p> <p>SFPUC commented on potential environmental impacts that it believed would result from increased rationing throughout the SFPUC RWS service area. To the extent the comments contained in this letter reference SFPUC comments or analyses, or are similar to comments contained in the SFPUC letter, please refer to letter 1166 to review responses to that letter.</p> <p>Reduced water supplies does not mean there will be a loss of landscaping. Many cities throughout California, in an effort to adapt to drought and use water in a sustainable way, are installing drought-tolerant landscaping in both public and private areas.</p>
1191	30	<p>BAWSCA agencies would likely implement rationing and restrictions/moratoriums on new connections.</p> <p>The 2016 Draft SED failed to analyze the impacts from rationing of water in the Bay Area in drought conditions under LSJR Alternatives 3 or 4 and possible additional rationing necessary under Alternative 2. Water Code section 353 provides, "When the governing body has so determined and declared the existence of an emergency condition of water shortage within its service area, it shall thereupon adopt such regulations and restrictions on the delivery of water and the consumption within said area of water supplied for public use as will in the sound discretion of such governing body conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection."</p> <p>Water Code section 356 provides that "[t]he regulations and restrictions may include the right to deny applications for new or additional service connections, and provision for their enforcement by discontinuing service to consumers willfully violating the regulations and restrictions."</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers. Also, please refer to Master Response 8.5 for a discussion regarding the programmatic analysis and adequacy of the SED.</p> <p>It would be speculative to assume that implementation of the plan amendments would result in urban sprawl in the outer regions of the Bay Area and the Central Valley, given that water supply is not the only limiting factor to growth in San Francisco and the Bay Area. A wide variety of factors influence growth and urban development within the plan area and within the City and County of San Francisco service area, one of which may be water supply. These factors result in a complex relationship to influence growth,</p>

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		<p>Under CEQA, certain large-scale residential, commercial or industrial development projects require the preparation of a Water Supply Assessment ("WSA"). [Footnote 58: See Wat. Code, § 10912 (defining "Project" to mean a proposed large-scale residential, commercial or industrial development, i.e., "residential development of more than 500 dwelling units"; "shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space"; "commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space"; "hotel or motel, or both, having more than 500 rooms"; "industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area"; "mixed-use project that includes one or more of the projects specified in this subdivision," or, a "project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project."); see also Cal. Code Regs., tit. 14, § 15155, subd. (a)(1) (similarly defining a "water-demand project").]</p> <p>The WSA is part of the EIR process and is intended to assist local governments in deciding whether to approve proposed projects. [Footnote 59: Pub. Resources Code, § 21151.9; Cal. Code Regs., tit. 14, § 15155, subd. (e) (lead agency shall include water assessment in the EIR); O.W.L. Foundation v. City of Rohnert Park (2008) 168 Cal.App.4th at 576.] If the projected water demand of the proposed project was not accounted for in the most recently adopted UWMP, or the public water system has no UWMP, the WSA must discuss whether the public water system's "total projected water supplies available during normal, single dry, and multiple dry water years" for a 20-year period will meet the "projected water demand [for] the proposed project," taking into account the agency's "existing and planned future uses, including agricultural and manufacturing uses." [Footnote 60: Wat. Code, § 10910, subd. (c)(3).] Significantly, if the WSA does not identify sufficient available water, then the lead agency must include that determination in its findings in the EIR for the project. [Footnote</p> <p>Based on the history of BAWSCA agencies' actions during past droughts, it can be reasonably assumed that some agencies would require increasing levels of rationing and may ultimately need to impose a moratorium on new development if LSJR Alternatives 3 or 4 were implemented and a sequential year drought occurred. It is also feasible that water rationing could occur if Alternative 2 was implemented.</p> <p>For example, as described in the BAWSCA member agency UWMPs and highlighted in the member agencies' comment letters on the 2016 Draft SED, 12 of BAWSCA's 26 member agencies have specifically stated in their SED comment letters that they'd be forced to impose a moratorium on new connections at the level of shortages prescribed by the 2016 Draft SED, which would be greater than a 50 percent reduction during multi-year droughts for many of the agencies. All agencies would impose water rationing to comply with shortages. that would result from implementing the SED. Such actions are reasonably foreseeable and should have been analyzed because the actions are included in various planning documents of the BAWSCA agencies, such as the UWMPs.</p> <p>These impacts were not considered in the 2016 Draft SED, including the economic impacts and impact from displaced growth and urban sprawl resulting from the widespread moratorium on building in the BAWSCA service area. Moreover, imposition of a development moratorium by BAWSCA agencies during a water shortage emergency, and under circumstances in which significant rationing had already been implemented, would be</p>	<p>development, and urbanization in an area. As such, it would be speculative to assume with a degree of certainty that growth would be displaced solely as a result of water supply because other factors such as availability of employment opportunities and development costs, could also dictate and limit where growth would or would not occur. Therefore, it would also be speculative to assume the extent and locations of any displaced growth associated with the plan amendments and any potential environmental impacts. Also, please see Master Response 8.5 regarding effects on regional growth and housing development.</p> <p>The commenter appears to suggest that the plan amendments will result in water supply assessments (WSA) that do not identify sufficient available water for large scale developments, which in turn will cause water suppliers to adopt policies that "force new development to go elsewhere." The modern WSA requirement was adopted as part of the "show me the water" package passed by the legislature in 2001 which included SB 610 (Costa). As stated in the September 12, 2001 Senate Floor Analysis for SB 610, the bill's proponents asserted that providing early knowledge of where growth is being planned would ensure that planning for new water supplies would begin as early as possible. Importantly, those proponents stated, that this "early planning is essential as California's water supply future evolves away from heavy reliance on dams and reservoirs and towards a more diversified mix of water projects: additional reclamation, conservation, conjunctive use, water transfers, offstream storage, desalination facilities, and other strategies." In other words, SB 610 recognized that changing water needs should be met but that it would require planning and implementation of a diverse portfolio of actions. The WSA requirement in SB 610 was meant to facilitate that planning and implementation by no longer allowing large-scale residential, commercial, or industrial developments to rely on unsustainable water assumptions. That approach is consistent with the SED, including Appendix L, City and County of San Francisco Analyses. Those analyses summarize the portfolio of actions SFPUC could take to meet water supply demand to make up any reductions in water supply from its existing dam and reservoir. The SED recognizes that those actions could include, for example, payments to the irrigation districts on the Tuolumne River to release water to meet flow requirements (thus allowing CCSF to retain water in Hetch Hetchy), water transfers, In-Delta diversion(s), and desalination. Moreover, the SED analyzes the possible environmental effects of water transfers in Appendix L and analyzes the cost and environmental evaluation of constructing and operating in-Delta diversions or a desalination plant in Chapter 16, Evaluation of Other Indirect and Additional Actions. As identified in the SED, Table L.6-4, the 2010 baseline economic output of San Francisco County was approximately \$125 billion and the Bay Area Region as a whole was approximately \$645 billion. It is unreasonable to assume that a region with \$645 billion in economic output will refuse to implement water supply actions and, as the commenter suggests, chill commerce by suggesting it go elsewhere. This conclusion is also unsupported by the CCSF 2015 Urban Water Management Plan (UWMP), which acknowledges the potential for new state and federal regulations that may require additional water releases for the preservation of aquatic species. The UWMP contains goals and objectives for the CCSF's Water System Improvement Program (WSIP), including meeting "at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat" as well as the need to "diversify water supply options during non-drought and drought periods and to improve the use of new water sources and drought management including groundwater, recycled water, conservation, and transfers." In Preserve Wild Santee v. City of Santee (2012) 210 Cal.App.4th 260, the court invalidated an Environmental Impact Report (EIR) for including, among other deficiencies, an inadequate water supply assessment. The court held that where it is impossible to confidently determine the availability of anticipated future water sources, the EIR must discuss "possible replacement sources or alternatives" and the "environmental consequences of those contingencies." (Preserve Wild Santee at p. 285, citing Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova (2007) 40 Cal.4th 412, 432.) That means that even if a local government could not rely on the current projections in the CCSF UWMP, even with the water supply improvements anticipated by the WSIP, the development action is still not barred. Instead, the local government would need to identify replacement sources, such as those identified programmatically in the SED, and analyze them on a project-specific level.</p>

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		<p>consistent with the State Board's own practice. [Footnote 62: See State Water Board Issues Moratorium on New Water Connections, available at http://www.dailydemocrat.com/article/ZZ/20141105/NEWS/141103990 (explaining that in 2014 the SWRCB "slapped" 22 water districts with development moratoriums due to lack of adequate water supply).] The State Board should have considered such planning documents and analyzed the reasonably foreseeable actions of the BAWSCA agencies.</p>	
1191	31	<p>The 2016 Draft SED fails to consider the public health impacts caused by shortages.</p> <p>The California Legislature has made clear that public health and safety are of "great importance" in CEQA's statutory scheme. [Footnote 63: Pub. Resources Code, §§ 21000, subdivs. (b), (c), (d), (g); §§ 21001(b), (d); California Bldg. Industry Assn. v. Bay Area Air Quality Management Dist. (2015) 62 Cal.4th 369, 386.] For example, Public Resources Code section 21083(b)(3) requires a finding of a "significant effect on the environment" whenever "[t]he environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly." No single definition exists for the volume of water necessary to meet basic water needs. [Footnote 64: Feinstein, Laura, Phurisamban, Rapichan, Ford, Amanda, Tyler, Christine, and Crawford, Ayana, Drought and Equity in California, Pacific Institute and The Environmental Justice Coalition for Water (January 2017) at p. 28 http://pacinst.org/app/uploads/2017/01/PI_DroughtAndEquityInCA_Jan_2017.pdf]</p> <p>California policy dictates that all humans have a right to water adequate for human consumption, cooking, and sanitary purposes. [Footnote 65: Wat. Code, § 106.3.] Prior State Board emergency regulation established an exemption from a prohibition on diverting water, under specified circumstances, up to a maximum of 50 gallons per capita daily in order to meet "minimum health and safety needs." [Footnote 66: Cal. Code Regs., tit. 23, § 878.1, subdivs. (a)-(b) [operative March 30, 2015 and repealed Dec. 29, 2015].] The Water Efficiency Act of 2009 identifies 55 GPCPD as a provisional conservation standard for "indoor residential water use" by 2020. [Footnote 67: Wat. Code, § 10608.20, subd. (b)(2)(A).]</p> <p>The mean indoor household use in California was 63 GPCPD in 2007-2009. [Footnote 68: DeOreo, William B., Peter W. Mayer, Leslie Martien, Matthew Hayden, Andrew Funk, Michael Kramer-Duffield, Renee Davis, James Henderson, Bob Raucher, and Peter Gleick. 2011. "California Single-Family Water Use Efficiency Study." Aquacraft Water Engineering and Management, available at http://water.cityofdavis.org/Media/PublicWorks/Documents/PDF/PW/Water/Documents/California-Single-Family-Home-Water-Use-Efficiency-Study-20110420.pdf.]</p> <p>Dr. Peter Gleick, founder of the Pacific Institute, identifies 200 liters per person per day, or 52 GPCPD, for solely drinking, sanitation, bathing and cooking in moderately industrialized countries. [Footnote 69: Peter H. Gleick, Basic Water Requirements for Human Activities: Meeting Basic Needs, Water International, 21 (1996) Table 9, p. 88., available at http://pacinst.org/app/uploads/2012/10/basic_water_requirements-1996.pdf.] Homes equipped with best available technologies and high-efficiency appliances and fixtures are estimated to use 32 GPCPD. [Footnote 70: DeOreo, Heberger, Matthew, Heather Cooley, and Peter H. Gleick. 2014. "Issue Brief: Urban Water Conservation and Efficiency Potential in California." Pacific Institute and the Natural Resources Defense Council, June. http://pacinst.org/app/uploads/2014/06/ca-water-urban.pdf.] These numbers do not take</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p> <p>Further, while, the 2016 Recirculated Draft SED's analyses and conclusions differ from the SFPUC's, the SED's analysis are supported by substantial evidence</p> <p>As stated in Appendix K, Program of Implementation, the State Water Board will also take actions as necessary to ensure that implementation of the flow objectives does not impact supplies of water for minimum health and safety needs, particularly during drought periods.</p> <p>Please see Master Response 3.6, Service Providers, regarding a discussion of water for minimum public health and safety needs, and please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a discussion on protection of water supply for minimum health and safety needs as identified by the program of implementation, as well as a discussion of emergency provisions and drought. Please see Master Response 2.7, Disadvantaged Communities, regarding the human right to water as set forth in Water Code section 106.3.</p>

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		<p>into consideration outdoor water use.</p> <p>Prior to the recent drought, average residential per capita water use for the BAWSCA service area was 79.3 GPCPD. Per the SFPUC's analysis, under a 50% unimpaired flow objective at a RWS demand of 223 mgd, maximum shortages to single-family residential and multi-family residential customers for the Wholesale Customers would be 50% and 41%, respectively. As a result, BAWSCA average per capita water use would be limited to approximately 41.6 GPCPD. However, residential customers of those BAWSCA agencies that are on the lower end of the BAWSCA residential per capita use range, in particular those agencies without access to alternative water supplies, would face more significant limits to residential per capita use. It is anticipated that several BAWSCA agencies would need to limit residential water use to 25 GPCPD or less, which is substantially lower than minimum indoor water use requirements for homes equipped with best available technologies.</p> <p>BAWSCA agencies required to prepare UWMPs have analyzed the water supply impacts of a 50 percent shortage as part of the preparation of their UWMPs. Assuming current normal-year water demands, BAWSCA agencies collectively would be subject to a 43 percent reduction in RWS supplies during the first year of a drought as a result of the proposed 40 percent unimpaired flow objective in the SED. In addition, during a 6-year extended drought, the BAWSCA agencies collectively would see a 43 percent cutback during the first three years and a 52 percent cutback in RWS supplies for the last three years of drought. Thus, the 15 agencies that receive 100% of their potable supply from the RWS would be subject to these shortages for their overall water supply. These agencies, and likely others who are subject to drought shortages in their alternative supplies, would be subject, even under current, pre-drought demand conditions, to greater than 50 percent supply shortages as a result of the SED Alternatives 3 or 4.</p> <p>Fifty percent reduction in supply from the RWS would make it impossible for some communities in the wholesale service area to deliver a minimum of 50 gallons per day to their residents, even if they were to completely shut off water to commercial and industrial customers, such as schools, hospitals, and parks. A community without any functioning industry, hospitals or public institutions, is not sustainable. In their SED comments, 11 of the 26 BAWSCA member agencies have specifically cited health and safety concerns due to lack of potable water supplies resulting from shortages due to implementation of the SED. It is likely that the remaining BAWSCA member agencies could also have similar health and safety concerns, due to the fact that all face challenges associated with the impact of shortages.</p> <p>The Bay Area cannot be expected to continue to thrive with such low water usage, and the impact to public health and safety on the 1.78 million residential customers and over 40,000 businesses in the BAWSCA member agency service area was not adequately analyzed in the 2016 Draft SED.</p>	
1191	32	<p>It is not reasonably foreseeable that the significant water supply impacts to the RWS could be completely mitigated by San Francisco's development and/or procurement of the replacement water supplies. The 2016 Draft SED impermissibly assumes that the significant water supply impacts to the RWS service territory that would result from imposition of LSJR Alternatives 3 and 4 could be completely mitigated by CCSF's development and/or procurement of the replacement water supplies identified in the 2016 Draft SED. This assumption is not supported by substantial evidence or reasonable inferences predicated on</p>	<p>Please see response to comment 1191-4 and 1191-15 regarding the approach to the analyses contained in the SED and indirect actions to address potential water supply reductions.</p>

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		fact.	
1191	33	<p>The 2016 Draft SED incorrectly assumes that CCSF could effectuate water transfers to purchase the requisite volume of replacement water from the Modesto and Turlock Irrigation Districts.</p> <p>The State Board's assumption that CCSF would be able to mitigate water supply impacts to the RWS service territory by purchasing the requisite volume of replacement water from the Modesto Irrigation District (MID) and the Turlock Irrigation District (TID) (collectively referred to as the "Districts") is not supported by substantial evidence, or reasonable inferences predicated on fact.</p> <p>Under the Wheeling Statutes a public agency may not be denied the use of the unused capacity of water conveyance facilities, if fair compensation is paid for its use. [Footnote 71: Wat. Code, § 1810.] However, the Wheeling Statute does not address the sources of supply or supply availability, just conveyance capacity. In a practical sense the transfer of water is limited by competition for any unused capacity and the purchase price of the water. These limiting factors make transfers impractical in times of drought.</p> <p>The 2016 Draft SED acknowledges the uncertainty of such transfers. For example, the Draft SED concedes that "[t]he number and location of surface water transfers that entities would undertake in response to surface water reductions as a result of approving the LSJR Alternatives is speculative and unknowable." [Footnote 72: 2016 Draft SED, at p.16-9.] Moreover, the 2016 Draft SED specifically identifies that transfers from Districts to CCSF are unreliable, noting that in 2012, "the MID Board of Directors rejected a proposal for long-term transfers to SFPUC. This rejection makes future temporary drought transfers uncertain." [Footnote 73: 2016 Draft SED, Appendix L, at p. L-20.]</p> <p>The SED further acknowledges that "[a] possible water transfer between SFPUC and irrigation districts relies on numerous unknown variables (e.g., willingness of irrigation districts to enter into a transfer agreement, the price of the water, and the volume of water needed)." [Footnote 74: 2016 Draft SED, Appendix L, at p. L-22.] And, even if a transfer could be effectuated, "it cannot be predicted whether and how CCSF and the Districts would agree to apportion responsibility for meeting future flow requirements." [Footnote 75: 2016 Draft SED, Appendix L, at p. L-13.]</p> <p>In the event a water transfer is unsuccessful, CCSF and each BAWSCA agency's responses are reasonably foreseeable as outlined in each agency's UWMP. Thus, the State Board's lack of analysis concerning what is reasonably foreseeable to occur should a transfer not be effectuated could have and should have been analyzed in the 2016 Draft SED. [Footnote 76: See Chawanakee Unified School Dist. v. County of Madera (2011) 196 Cal.App.4th 1016, 1029 [126 Cal.Rptr.3d 859, 868], as modified on denial of reh'g (July 19, 2011) [EIR failed to consider reasonably foreseeable impacts of construction on the physical environment beyond the school facilities]; see also County Sanitation Dist. No. 2 of Los Angeles County v. County of Kern (2005) 127 Cal.App.4th 1544, 1586 ["Predicting the physical changes a project will bring about is an inescapable part of CEQA analysis."]; see also Planning and Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, 919, as modified on denial of reh'g (Oct. 16, 2000) ["CEQA does compel reasonable forecasting."]; Pub. Resources Code, § 21168.5.]</p>	<p>Please see responses to Comments 1191-15 and 1191-34 regarding water transfers. In addition, please see Master Response 8.5, City and County of San Francisco, regarding transfer of surface water as one indirect action to address potential water supply reductions.</p>

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1191	34	<p>Based on BAWSCA's experience, it is unreasonable to assume a Delta transfer could be completed.</p> <p>The information and conclusions presented in the 2016 Draft SED are not consistent with BAWSCA's experience with water transfers, which have proven difficult. BAWSCA has been investigating the possibility of water transfers to meet member agencies' long term water reliability needs since 2002, when BAWSCA's predecessor began working on a Water Transfers Work Plan. [Footnote 77: Bay Area Water Users Association, [BAWSCA's predecessor agency], Water Quality Evaluation for a Dry Year Water Transfer (June 30, 2003).]</p> <p>BAWSCA continues to work on the implementation of water transfers as a part of its Long-Term Reliable Water Supply Strategy, which has been ongoing since 2010. [Footnote 78: BAWSCA Phase I Scoping Report.] For example, the Long-Term Reliable Water Supply Strategy Phase IIA Report identified water transfers from sources (sellers) outside the BAWSCA service area as a promising option to address the dry year reliability needs of the BAWSCA member agencies. [Footnote 79: BAWSCA's 2015 Technical Memorandum: BAWSCA-EBMUD Pilot Water Transfer Phase II Pilot Plan (hereinafter "BAWSCA-EBMUD Technical Memorandum"). Available starting at p. 61 of the following: http://bawasca.org/uploads/agendas/15_07_16_Agenda_FINAL_PACKET.pdf.]</p> <p>As part of the Long-Term Reliable Water Supply Strategy, BAWSCA evaluated several options for the source of supply and conveyance to the BAWSCA agencies, which are the two critical components of any transfer aside from identifying a willing seller. BAWSCA considered two options as a transfer supply source: (1) the Sacramento Valley, north of the Delta and (2) the San Joaquin Valley, in and south of the Delta. For supplies originating outside of the Bay Area, there are limited existing conveyance facilities that could be used to wheel water to the BAWSCA member agencies. The potential options evaluated include: State Water Project (SWP) and Central Valley Project (CVP) facilities; SFPUC-SCVWD emergency intertie and SCVWD facilities; and with SFPUC-East Bay Municipal Utilities District (EBMUD)-City of Hayward Emergency Intertie (Hayward Intertie) and EBMUD facilities.</p> <p>Significant work has been done by BAWSCA in trying to implement a pilot water transfer in partnership with EBMUD and others since the publication of the Long-Term Reliable Water Supply Strategy Phase IIA Report. In May 2012, EBMUD identified water projects to meet its future dry year water supply needs including the newly completed Freeport Regional Water Project (FRWP) that diverts water from the Sacramento River and conveys it to EBMUD's service area.</p> <p>In September 2012, EBMUD and BAWSCA entered into a Memorandum of Understanding to prepare the BAWSCA-EBMUD Short-Term Pilot Water Transfer Plan. [Footnote 80: BAWSCA-EBMUD: Short-Term Pilot Water Transfer Plan (September 19, 2013) available at http://bawasca.org/docs/BAWSCA-EBMUD%20Water%20Transfer%20Plan_Final%20Sept.pdf (hereinafter "BAWSCA-EBMUD Pilot Water Transfer Plan").] The purpose of the Pilot Plan was to evaluate the feasibility of partnering as buyers on long-term water transfer projects to improve future water supply reliability for the respective agencies. The Pilot Plan, published in September 2013, studied the potential to conduct a one-year pilot water transfer of 1,000 AF in a future dry-year when EBMUD is planning to operate the Freeport Regional Water Project (FRWP).</p>	<p>Please see response to Comment 1191-15.</p> <p>In addition, please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding transfer of surface water as one approach to address potential water supply reductions.</p> <p>As described in Chapter 4, Introduction to the Analysis, the transfer or sale of surface water is not a method of compliance, rather it is an action that the regulated community could take to reduce potential reservoir or water supply effect associated with implementing the LSJR alternatives. The specific actions that could be undertaken by an entity to comply with the plan amendments will depend on a number of factors, including feasibility, cost, flexibility, time to implement, location, and likelihood of success. As discussed in Chapter 16, Evaluation of Other Indirect and Additional Actions, a suite of reasonably foreseeable actions that affected entities may undertake to address possible surface water supply reductions anticipated in response to implementation of the LSJR Alternatives 2, 3, and 4 with or without adaptive implementation was presented in the SED. Surface water transfers were considered in the SED analysis because relevant planning documents (e.g., BAWSCA's Long-Term Reliable Water Supply Strategy Report, and SFPUC's Water Management Action Plan [WaterMAP]) indicated that such transfers had been or were being considered as part of the overall water supply planning effort(s) for the Bay Area. As described in Chapter 16, although agencies may elect not to pursue certain indirect actions under particular circumstances, it is reasonable to include them in a portfolio of possible actions because they have been/are being considered as part of current water supply planning and may be appropriate for further consideration depending on how circumstances change. Furthermore, if these actions do not occur, the potential environmental impacts and estimated costs associated with these actions, as disclosed in Chapter 16, would not occur.</p>

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		<p>As shown on Figure 13 [ATT13], a water transfer involving EBMUD and BAWSCA would involve purchasing water from a willing seller, diverting the water using the FRWP intake, conveying the water through the FRWP facilities, the U.S. Bureau of Reclamation’s (USBR) Folsom South Canal, and EBMUD’s raw water and treated water distribution systems, and delivering the transfer water to the BAWSCA service area via the Hayward Intertie, located in the City of Hayward (Hayward), which is jointly owned by EBMUD and the SFPUC. Transfer water delivered from EBMUD through the Hayward Intertie would be directly used by Hayward in lieu of taking delivery of a like amount of water from the RWS. [Footnote 81: BAWSCA-EBMUD Pilot Water Transfer Plan; BAWSCA-EBMUD Technical Memorandum.] It was assumed, based on seasonal availability of transfer water, that BAWSCA would have at most six months of water transfers per year. [Footnote 82: BAWSCA-EBMUD Technical Memorandum.]</p> <p>The recent historic drought highlighted challenges for water transfer implementation and resulted in BAWSCA unable to implement a pilot water transfer. [Footnote 83: BAWSCA-EBMUD Technical Memorandum.] For example, BAWSCA encountered the following challenges as detailed in the EBMUD-BAWSCA Technical Memorandum:</p> <ul style="list-style-type: none"> -Access to capacity is a serious issue in drought years, as EBMUD may need to use the entire capacity of the FRWP to deliver their own supplies. -During the drought conditions, sellers may have less supply to sell, increasing the competition for purchase of transfer water and increasing the price of transfer water. -Transfer water is only available at certain times of the year, based on agency availability and environmental constraints, which may not correspond to the time when capacity is available to transfer the water. -The availability of transfer water changes with type of water year (i.e., wet or dry), adding complexity to scheduling a water transfer to BAWSCA. -Drought conditions created difficulty for agencies in getting Warren Act contracts from the USBR for use of the Folsom South Canal, as USBR staff prioritized water transfers to CVP contractors and areas in critical drought conditions. -Drought conditions increased the requirements for both State and Federal environmental compliance analyses that are prerequisite to implementing a water transfer. -There was not sufficient time to complete all the required regulatory approvals and environmental reviews. One-year transfers that require State approval are exempt from CEQA, however, federal approval and National Environmental Policy Act requirements of the USBR have no similar statutory exemption. -Wheeling costs through the EBMUD system are higher than anticipated during Phase I of the Pilot Plan. -During the extreme drought conditions, BAWSCA and EBMUD could be competing for the purchase of the same water supplies and potentially the same conveyance capacity. <p>A similar water transfer study is planned between BAWSCA and the Santa Clara Valley Water District (SCVWD) to explore the benefits of partnering on future water transfer projects to improve long-term and dry year water supply reliability in each of their service</p>	

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		<p>areas. Figure 14 [ATT14] illustrates the potential path of water from SCVWD to BAWSCA agencies. [Footnote 84: BAWSCA-EBMUD Technical Memorandum.]</p> <p>Similar to the BAWSCA-EBMUD transfer described above, there are challenges with a potential SCVWD-BAWSCA transfer. More specifically, agreements take time to negotiate (water transfer agreements, intertie use agreements, conveyance and treatment agreements, etc.); environmental considerations and permitting concerns are significant (i.e., the level of environmental documentation is proportional to the complexity of the transfer proposed); the timing of the transfer is subject to agency-specific constraints regarding available capacity, the period when transfer water is available, etc.; the cost of the transfer must be weighed against the needs, willingness, and/or ability to pay of the recipient of the water; and finally there are political considerations as well as public outreach that often needs to be taken into account. All told, it takes considerable time and effort to negotiate even what may be considered a straight-forward transfer.</p> <p>The 2016 Draft SED fails to account for any of the challenges to a water transfer that BAWSCA experienced directly, as described above. These same challenges would be faced by the SED proposed CCSF water transfer. Thus, the proposed large-scale water transfer from the Districts to San Francisco cannot be considered a reasonably foreseeable method of compliance by San Francisco with the LSJR Alternatives. [Footnote 85: Pub. Resources Code, § 21159, subd. (a); Cal. Code Regs., tit. 23, § 3777, subd. (b)(4).]</p>	
1191	35	[ATT13: Figure 13: BAWSCA-EBMUD Water Transfer Map.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	36	[ATT14: Figure 14. BAWSCA-SCVWD Water Transfer Map.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	37	<p>BAWSCA agencies have also had difficulties with planning and implementing water transfers.</p> <p>ACWD [Alameda County Water District], as part of developing their own water transfer agreements and use of the South Bay Aqueduct (SBA), has evaluated the potential available capacity for transfers of additional supply through the SBA and has identified a limited capacity, with a variable and narrow time window, to transfer surplus, non-ACWD supplies, through the SBA during droughts and normal years. In ACWD's SED comment letter, they provide a discussion that sheds further light on the complexity of executing a transfer during droughts, citing a recently failed transfer opportunity:</p> <p>"ACWD also questions the notion within the SED that any water supply shortfall can simply be mitigated with water transfers. Water transfers are temporary in nature, unpredictable in cost and quantity, complicated to obtain and implement, and are dependent on regulatory approvals. During the recent drought, and despite the State Water Resource Control Board's support (which we greatly appreciated), ACWD and the Contra Cost Water District were unable to execute a transfer of 5,000 AF of our own, secured water supply. Despite having all regulatory approvals, the Central Valley Project and State Water Project Coordinated Operations were not willing to execute the transfer due to temporary and unpredictable Delta flow conditions. By the time suitable conditions returned, the permits had expired. Given the uncertainties of water transfers, ACWD does not believe that dependence on unsecured transfers is a responsible approach to meet the needs of customers during normal, dry, and multiple dry water years." [Footnote 86: See ACWD's SED</p>	Please see responses to Comments 1191-15 and 1191-34.

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>Comment Letter.]</p> <p>Based on the limited ability of the BAWSCA member agencies (with the exception of ACWD) to be able to purchase transfer supply from the State Water Project (SWP) system, and the potential capacity limitations on transfer through the SBA, it is highly unlikely that the SBA could be used by BAWSCA to transfer purchased supply from the Sacramento Valley, Delta, or San Joaquin Valley to the other member agencies. [Footnote 87: BAWSCA Phase I Scoping Report.]</p>	
1191	38	<p>The 2016 Draft SED incorrectly assumes that the irrigation districts would agree to transfer the required volume of water at the assumed price .</p> <p>The SED concedes that the "assumed price is key to the analysis, and is derived based on a review of recent water purchases involving both MID and TID, as well as by other agricultural districts in California." [Footnote 88: 2016 Draft SED at pp. 20-48; see also 2016 Draft SED at pp.16-7, 16-8 (identifying water transfers between other water agencies that occurred in 2002-2004 and 1997-2005, and concluding that based on this information, "a reasonable cost of \$1,716 per acre-foot is assumed for a [Environmental Water Account] contract sale or \$310 per acre-foot for a long-term transfer.").]</p> <p>The total costs associated with suggested transfer in the 2016 Draft SED must be determined, including purchase, possible storage, transfer, or wheeling and distribution costs to the BAWSCA member agencies. These costs will vary depending on the type and location of the supply source, and the agreements and infrastructure required to wheel the transfer supplies to the BAWSCA service area. Based on BAWSCA's experience, the costs may be higher if there are contract requirements requiring payment for supply even if the supply is not taken every year, or maintaining wheeling capacity through other agency water systems. [Footnote 89: BAWSCA Phase I Scoping Report.] Moreover, other agencies (including BAWSCA and its member agencies) would compete with CCSF for available supplies resulting in increased prices.</p> <p>Based on BAWSCA's experience, the 2016 Draft SED assumed cost of \$1,000 per acre foot is not realistic for purchase and conveyance of transfer water. When BAWSCA began investigating water transfers, the price of water alone, not including associated wheeling and distribution costs, was estimated to be between \$75 and \$275 per acre foot. When the drought hit and BAWSCA began negotiations with water agencies, the price increased to \$450 per acre foot in 2014 and \$500 per acre foot in 2015 for the same supply. Based on the data gathered during 2015, the cost of water and cost of conveyance was estimated to be up to \$2,300 per acre foot to transfer approximately 1,000 acre feet to BAWSCA via EBMUD, FRWP and the City of Hayward, which includes the RWS cost of distributing the transfer water. BAWSCA staff is willing to discuss with State Board staff in detail the limitations BAWSCA has experienced in attempting to purchase water and facilitate a transfer into the RWS.</p> <p>Finally, the 2016 Draft SED improperly incorporates WSIP PEIR environmental analysis of a potential 2 mgd transfer with Districts and states that a larger water transfer would undergo project-level CEQA review at time it is proposed. [Footnote 90: 2016 Draft SED, Appendix L, at p. L-23.] An accurate, stable, and finite project description is an indispensable component of an informative and legally sufficient EIR. [Footnote 91: Cal. Code Regs., tit. 23, § 15124.] A "project" is the "whole of an action" that has the potential to result in a physical change to the environment "directly or indirectly." [Footnote 92: Cal. Code Regs., tit. 23, § 15378(a).]</p>	<p>Please see response to comment 1191-4. For information regarding the project description, see Master Response 2.1, Amendments to the Water Quality Control Plan. To the extent that this comment raises issues also raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>

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Ltr#	Cmt#	Comment	Response
		<p>An agency cannot chop up a project into pieces to avoid analyzing and discussing in the EIR the sum of environmental impacts resulting from the project. [Footnote 93: Christward Ministry v. Superior Court (1986) 184 Cal.App.3d 180, 193.] The impacts of the proposed transfer must be fully evaluated in the 2016 Draft SED. For further analysis regarding the deficient analysis contained in the 2016 Draft SED concerning large-scale transfer, please see CCSF SED Comments, starting on page 80, incorporated herein by reference.</p>	
1191	39	<p>It is not reasonably foreseeable that CCSF could develop the identified in-Delta diversion facility.</p> <p>The State Board's assumption that CCSF would be able to mitigate water supply impacts to the RWS service territory by developing the identified in-Delta diversion facility and associated infrastructure is not supported by substantial evidence, or reasonable inferences predicated on fact. The environmental review of the in-Delta diversion facility improperly relies on the analysis in the WSIP PEIR. The Draft WSIP EIR found that "because of numerous institutional and regulatory uncertainties associated with this alternative (largely dependent on how and where the SFPUC would purchase the water), it is unknown if this alternative could achieve the WSIP level of service goals for delivery and water supply reliability. [Footnote 94: San Francisco Planning Department, City and County of San Francisco, Water System Improvement Plan, Program Environmental Impact Report (October 2008), at 9-126, available at http://sf-planning.org/sfpuc-negative-declarations-eirs, (hereinafter "Water System Improvement Plan, Program Environmental Impact Report").]</p> <p>Therefore, since this alternative would have uncertain water supply reliability and an unknown ability to reduce impacts on Tuolumne River resources, as well as significant additional environmental impacts, it was eliminated from further consideration. [Footnote 95: Water System Improvement Plan, Program Environmental Impact Report at pp. 9-125 to 9-126.] For further description of why the In-Delta diversion facility is highly speculative and not reasonably foreseeable, please see the CCSF SED Comments. [Footnote 96: CCSF SED Comments at pp. 95-97.]</p>	<p>Please see response to comment 1191-4.</p> <p>In-Delta diversions is included in Chapter 16, Evaluation of Other Indirect and Additional Actions, because documents indicated the project had previously been under consideration. Although entities may elect not to pursue certain indirect or additional actions under particular circumstances, it is reasonable to include them in a portfolio of possible actions because they were considered in the past and may be appropriate for further consideration depending on how circumstances change. Furthermore, if these actions do not occur, the potential environmental impacts and estimated costs associated with these actions, as disclosed in Chapter 16, would not occur. Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, for a discussion regarding potential responses to water supply reductions, including in-Delta diversions. To the extent that this comment raises issues also raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>
1191	40	<p>It is not reasonably foreseeable that San Francisco could develop a desalination plant. The SWRCB's assumption that San Francisco would be able to mitigate water supply impacts to the RWS service territory by developing a 56,000 AF/year desalination plant located at Mallard Slough is not supported by substantial evidence, or reasonable inferences predicated on fact. For a further description of why a desalination facility is highly speculative and not reasonably foreseeable, please see the CCSF SED Comments. [Footnote 97: CCSF SED Comments at pp. 86-95.]</p>	<p>The BARDP and Poseidon desalination projects were described in Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.2.6 (Water Supply Desalination) to serve as examples of desalination facilities in California, and to provide a context for the general discussion of the types of environmental impacts that would result from desalination facilities. The SED does not assume that a 56,000 AF/y would be constructed at Mallard Slough or any other location. Agencies will decide whether and how to undertake particular projects broadly described in Chapter 16 and elsewhere in the SED, and the specific environmental effects will depend on project-specific decisions made by those agencies.</p> <p>Desalination is included in Chapter 16, and in Appendix L, City and County of San Francisco Analyses, because documents indicated they had previously been under consideration. Although agencies may elect not to pursue certain actions under particular circumstances, it is reasonable to include them in a portfolio of possible actions because they were considered in the past and may be appropriate for further consideration depending on how circumstances change. Furthermore, if these actions do not occur, the potential environmental impacts and estimated costs associated with these actions, as disclosed in Chapter 16, would not occur.</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, for a discussion regarding potential responses to water supply reductions. Please also see Master Response 8.5 and Master Response 1.1, General Comments for information regarding the</p>

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			<p>programmatic level of analysis.</p> <p>To the extent that this comment raises issues also raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>
1191	41	<p>The 2016 Draft SED fails to adequately analyze the reasonably foreseeable reduction in the water supplies and the resulting significant impact on the Bay Area's economy.</p> <p>The 2016 Draft SED incorrectly assumes that SFPUC would replace water supplies rather than impose shortages, despite having information that this is unlikely. The 2016 Draft SED restricts the impact analysis to the unlikely development of new water supplies, despite acknowledging that shortages would be more expensive and without analyzing the resulting economic impact to the Bay Area from reduced water supplies. Implementation of LSJR Alternatives 3 or 4 would cause severe water shortages in the RWS service territory during a sequential year drought. [Footnote 98: See SFPUC Analysis of Changes to Flow Criteria, Table 2-4 at pp. 10-12.]</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p> <p>In addition, please see Master Response 8.5 for a discussion of the programmatic level of analysis and regarding potential effects on regional economic activity in the SFPUC water system service area. Further, see Master Response 1.1, General Comments, for information about the adequacy of the SED and the programmatic level of analysis.</p> <p>To the extent that this comment raises issues raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>
1191	42	<p>The 2016 Draft SED contains an inadequate economic analysis.</p> <p>The 2016 Draft SED contains an inadequate economic analysis in Chapter 20, and although it acknowledges the requirement to include economic considerations when establishing water quality objectives under Water Code section 13241[Footnote 99: 2016 Draft SED at p. 20-1.], it qualifies this requirement by the lower level of detail required by a programmatic CEQA document:</p> <p>"The economic analysis presented in this SED will help inform the State Water Board's consideration of potential changes to the 2006 Bay-Delta Plan related to LSJR flow and southern Delta water quality objectives. Any project-level changes to water rights or other measures that may be needed to implement any approved updates to the 2006 Bay-Delta Plan will be considered in subsequent proceedings and would require project-level analysis, as appropriate. Therefore, the economic analyses presented in this chapter, which also summarize results from resource analyses presented elsewhere in this SED and its appendices, are limited by the programmatic nature of this document." [Footnote 100: 2016 Draft SED at p. 20-3.]</p> <p>A thorough economic analysis is required under Water Code section 13241. [Footnote 101: City of Arcadia v. State Water Resources Control Bd., 191 Cal. App. 4th 156, 176 [Cal. App. 4th Dist. 2010] ["Water Code section 13241 does impose obligations that can be enforced by a writ of mandate," separate and apart from any CEQA requirement or cause of action."].]</p> <p>In general, within the BAWSCA service area, the first 20 to 30-percent of water supply reductions can be borne by the residential sector alone. [Footnote 102: CCSF SED</p>	<p>The State Water Board appropriately considered economics in Chapter 20, Economic Analyses. Please see Master Response 1.1, General Comments, regarding general information about the scope of the economic analyses and the regulatory context. Please also see Master Response 8.0, Economic Analyses Framework and Assessment Tools, for more information regarding the regulatory context and the assumptions and considerations made within the framework of analyzing economic effects. Please also see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, for a discussion of key differences in analyses presented in the SED and by SFPUC. To the extent that this comment raises issues raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>

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		<p>Comments, pp. 28-32.] The economic losses from these shortages are experienced as welfare losses by the consumer, and manifest as consumers not being able to receive the water supply reliability that they have paid for through their water rates. Over time, these welfare losses result in dissatisfaction by customers with their respective local water providers and City Councils because they are paying for something--water supply reliability--that they are not receiving. [Footnote 103: CCSF SED Comments, pp. 28-32 and "Bay Area Socioeconomic Impacts Resulting from Instream Flow Requirements for the Tuolumne River," The Brattle Group, prepared by David Sunding, Ph.D., attached as Appendix 3 to the CCSF SED Comments (referred to as the "2017 Socioeconomic Impacts Analysis").]</p> <p>Significantly, once water shortages reach a level that can no longer be borne by the residential sector alone, further water supply reductions require water rationing by the commercial and industrial sectors that, in turn, manifest in the form of reduced economic output and job losses. The threshold at which water supply reductions can no longer be solely absorbed by the residential sector--a point that will necessarily vary depending on the alternative water supplies available to each BAWSCA agency--represents a critical juncture.</p> <p>Implementation of LSJR Alternatives 3 or 4 would cause severe water shortages in the RWS supply during multi-year droughts. Agencies' other water supplies would also be subject to reductions during multi-year droughts. These water supply reductions would be too severe to be borne by only the residential sector, so there would also be cutbacks on water supply to the commercial and industrial sectors. These major shortages to the commercial and industrial sectors would result in significant losses of jobs and economic output in the BAWSCA service area.</p> <p>Assuming the full system demand of 265 mgd, a recurrence of 1988 hydrology, and a 40 percent unimpaired flow on the Tuolumne River; the incremental impacts anticipated in the BAWSCA service area (over and above those that would occur in the base case) would be the loss of 71,315 jobs and loss in economic output of over \$36 billion. [Footnote 104: See 2017 Socioeconomic Impacts Analysis, Tables 9 and 11 at pp. 10-11.] Similar major losses would occur each year of a multi-year drought. Over a six-year drought sequence that mimics the 1987-1992 drought, incremental job losses would total 374,886 and incremental loss of economic output would total more than \$199 billion in the BAWSCA service area alone, using the same assumptions for water demand. [Footnote 105: 2017 Socioeconomic Impacts Analysis, Tables 9 and 11 at pp. 10-11.] Figures 15 [ATT15] and 16 [ATT16] illustrate the anticipated incremental loss of jobs and loss in economic output, respectively, over a recurrence of the 6-year drought sequence, assuming a full system demand of 265 mgd.</p> <p>Assuming the current (pre-drought) system demand of 223 mgd, a recurrence of the 1988 hydrology, and a 40 percent unimpaired flow mandated by the SED: the incremental impacts anticipated in the BAWSCA service area (over and above those that would occur in the base case) would be the loss of 53,729 jobs and loss in economic output of over \$18 billion. Similar major losses would occur each year of a multi-year drought. Over a six-year drought sequence that mimics the 1987-1992 drought, incremental job losses would total 282,368 and incremental loss of economic output would total more than \$98 billion in the BAWSCA service area alone, using the same assumptions for water demand. [Footnote 106: 2017 Socioeconomic Impacts Analysis, Tables 8 and 10 at pp. 10-11.]</p> <p>Figures 17 [ATT17] and 18 [ATT18] illustrate the anticipated incremental loss of jobs and loss in economic output, respectively, over a recurrence of the 6-year drought sequence, assuming a RWS demand of 223 mgd. Economic and job losses would be even greater if a 50</p>	

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		percent unimpaired flow was mandated on the Tuolumne River, as shown in Figures 15, 16, 17, and 18 [ATT15-ATT18].	
1191	43	[ATT15: Figure 15: Annual Incremental Job Losses to Wholesale Customers at Full RWS Demands of 265 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	44	[ATT16: Figure 16: Annual Incremental Economic Output Losses to Wholesale Customers at Full RWS Demands of 265 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	45	[ATT17: Figure 17: Annual Incremental Job Losses to Wholesale Customers at Current (Pre-Drought) RWS Demands of 223 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	46	[ATT18: Figure 18: Annual Incremental Economic Output Losses to Wholesale Customers at Current (Pre-Drought) RWS Demands of 223 MGD during Historic 6-Year Drought Sequence for Three Unimpaired Flow Objectives.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	47	<p>The 2016 Draft SED fails to consider the economic impact To BAWSCA agencies' rates.</p> <p>The 2016 Draft SED fails to analyze the economic impacts resulting from BAWSCA agencies' reasonably foreseeable actions to the proposed reduced flows. The Draft 2016 SED failed to analyze the impacts from increased competition due to the shortages and how prices will be inflated by a drought and reduced flows available to supply the Bay Area.</p> <p>Wholesale water rates are based upon the Wholesale Customers' collective share of the expenses incurred by CCSF in delivering water to them on the basis of proportional annual use. This collective share of expenses is defined as the "Wholesale Revenue Requirement." Wholesale rates are set prospectively based on the budget of the Wholesale Revenue Requirement and estimates of water purchases in the following fiscal year. After the close of each fiscal year, the difference of the actual costs allocable to the Wholesale Customers and the amounts billed to the Wholesale Customers for that fiscal year will be posted to a "balancing account." The amount in the balancing account shall be taken into consideration in establishing the following year's wholesale rates. As such, if total water deliveries by CCSF decrease, the effective water rate (\$ per acre-foot) will increase.</p> <p>SFPUC's water rates for its 27 wholesale customers derive from the Water Supply Agreement executed in 2009 between the SFPUC and the Wholesale Customers. [Footnote 107: The SFPUC has individual wholesale contracts with 27 agencies, 26 of which are BAWSCA members. The Cordilleras Mutual Water Company ("Cordilleras MWC") is also a wholesale customer of the SFPUC but is not BAWSCA member. (San Francisco Public Utilities Commission, City and County of San Francisco, 2015 Urban Water Management Plan (June 2016) at p. 2-2).]</p> <p>Based on the 2009 Water Supply Agreement, Wholesale Customers pay a proportionate share of RWS operating expenses, debt service on bonds sold to finance regional system improvements, and other regional system improvements funded from current revenues, along with the repayment of previously constructed capital assets that were not otherwise fully depreciated. [Footnote 108: Water Supply Agreement Between The City And County Of</p>	<p>The comment provides information about an increase in rates for BAWSCA agencies and within the SFPUC RWS service area under different LSJR alternatives based on the analysis performed in the comment letter. Chapter 20, Economic Analyses, discloses potential ratepayer effects based on the analysis performed by the State Water Board, specifically, Section 20.3.3, Effects on Municipal and Industrial Water Supplies and Affected Regional Economies, M&I Water Supply Conditions in the SFPUC Service Area and Potential Cost, Ratepayer, and Regional Economic Effects, Assessment Methods for Potential Ratepayer Effects, and Results for Potential Ratepayer Effects. This section discusses how the LSJR alternatives could potentially affect water supply costs, the regional economy, and ratepayers in the service area.</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p> <p>Please see Master Response 1.1, General Comments, regarding general information about the scope of the economic analyses and the regulatory context, and the adequacy of the SED. Please also see Master Response 8.0, Economic Analyses Framework and Assessment Tools, for more information regarding the regulatory context and the assumptions and considerations made within the framework of analyzing economic effects. Please see Master Response 8.4, Non-Agricultural Economic Considerations, for responses to comments regarding rate effects.</p> <p>To the extent that this comment raises issues raised by SFPUC, please refer to letter 1166 to review responses to that letter.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>San Francisco And Wholesale Customers In Alameda County, San Mateo County And Santa Clara County, July 2009 (WSA) available at https://sfwater.org/modules/showdocument.aspx?documentid=8632.</p> <p>In general, costs are apportioned to Wholesale Customers based on proportionate water use, and rates are reset annually to cover costs as mandated by the 2009 Water Supply Agreement. [Footnote 109: Id.; 2016 Draft SED, Appendix L, at p. L-10.] Based on SFPUC wholesale water costs, costs for other water supplies, and other budgetary conditions faced by the 27 agencies that purchase water from SFPUC, each wholesale customer then sets the retail water rates for the end-use customers (e.g., residential, commercial, and industrial). [Footnote 110: Id; .2016 Draft SED, Appendix L, at p. L-11.]</p> <p>For the BAWSCA Agencies, rates will need to increase by 6% in the 2016 Draft SED's 30% unimpaired flow case, by 9% in the 40% unimpaired flow case, and by 15% in the 50% unimpaired flow case. [Footnote 111: 2017 Socioeconomic Impacts Analysis at p. 12.] Although raising water rates is seen by state regulatory agencies and some environmental organizations as a viable method to encourage lower water use, water agencies must approach the rate setting process with considerable planning and care. State law requires utilities to notify all property owners in writing of proposed rate changes well in advance and to hold a public hearing to receive protests. It also requires water charges to be limited to the actual cost of service, and hence using rates to manage drought supplies is complicated. [Footnote 112: Cal. Const., arts. XIII C, XIII D.] For water utilities that are in the midst of performing cost-of-service studies, taking any rate action is subject to legal scrutiny until and unless those studies are completed (and/or considered current).</p> <p>Even with these significant rate increases, the BAWSCA agencies will be forced to make heavier use of balancing accounts and other financial reserves to cope with the budgetary instability caused by less reliable water supplies. [Footnote 113: 2017 Socioeconomic Impacts Analysis at p. 12.] Agencies may find themselves having to cut operating expenses (laying off workers for example) and / or delaying needed capital spending aimed at maintaining their water systems to counter that instability. [Footnote 114: See California water prices set to rise next year: Fitch (Reuters, August 18, 2015) http://www.reuters.com/article/us-california-water-rates-idUSKCN0QN1PH20150818.]</p>	
1191	48	<p>The 2016 Draft SED fails to adequately analyze increasing Bay Area population growth and housing needs, the impacts from displaced low-density growth, and the environmental costs of foregoing smart growth development.</p> <p>Notwithstanding a reduction in water supplies projected in the 2016 Draft SED, the Bay Area faces substantial projected increases in employment and population between now and 2040. [Footnote 115: Memorandum to the Joint MTC Planning Committee/ABAG Administrative Committee at 2 (September 2, 2016).] As the housing market has recovered from the recession, thousands of new workers have been attracted to the high-paying tech economy of the Bay Area. [Footnote 116: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at pp. 7- 8. (2017) available at http://www.greenbelt.org/at-risk-2017/.] The resulting increase in housing costs has not only had a direct economic impact on many Bay Area families, it has also increased incentives to build on greenbelt land, with development proposals on open space and farmland on the periphery of the Bay Area.</p>	<p>This comment provides information about projected increases in employment and population in the Bay Area. Please see the response to comment 1191-49 regarding growth and housing.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>[Footnote 117: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at 3.]</p> <p>If affordable housing is not located close to these high demand jobs, people will commute from a distance where there are less expensive homes. [Footnote 118: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at 29.] ("Affordability" refers to households' ability to purchase essential goods such as food, housing, transportation and healthcare. [Footnote 119: Todd Litman. 2015. "Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics." Victoria Transport Policy Institute available at http://www.vtpi.org/sg_save.pdf at p. 16.]) The costs of urban sprawl are hidden, and include more than increased transportation costs. [Footnote 120: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at 29.]</p>	
1191	49	<p>The 2016 Draft SED fails to adequately analyze Bay Area population growth and resulting displaced low-density growth from the proposed SED alternative flows.</p> <p>An EIR must discuss any inconsistencies between the proposed project and applicable general plans, specific plans and regional plans. [Footnote 121: Cal. Code Regs., tit. 14, § 15125(d); Joshua Tree Downtown Business Alliance v. County of San Bernardino (2016) 1 Cal.App.5th 677, 695, review denied (Oct. 12, 2016.)] Plan Bay Area was adopted by the Association of Bay Area Governments ("ABAG") and the Metropolitan Transportation Commission ("MTC") in 2013 in accordance with "The California Sustainable Communities and Climate Protection Act of 2008" (California Senate Bill 375 ["SB 375"], Steinberg), which requires each of California's 18 metropolitan areas--including the Bay Area--to reduce greenhouse gas emissions from cars and light trucks. [Footnote 122: Plan Bay Area: A Strategy for a Sustainable Region, July 18, 2013, Association of Bay Area Governments, Metropolitan Transportation Commission, available at http://mtc.ca.gov/sites/default/files/0-Introduction.pdf (referred to below as "Plan Bay Area 2013"), at p. 4.]</p> <p>SB 375 directs "the Bay Area and other California regions [to] develop a Sustainable Communities Strategy (SCS)--a new element of the regional transportation plan (RTP)--to strive to reach the greenhouse gas (GHG) reduction target established for each region by the California Air Resources Board." [Footnote 123: Plan Bay Area 2013.] SB 375 also "requires regions to plan for housing that can accommodate all projected growth, by income level, so as to reduce the pressures that lead to in-commuting from outside the nine-county region." [Footnote 124: Plan Bay Area 2013 at p. 99.] Plan Bay Area 2013 is the region's first RTP subject to SB 375. [Footnote 125: Plan Bay Area 2013 at p. 4.]</p> <p>Although Plan Bay Area 2013 has multiple performance targets, "[t]wo of the targets are not only ambitious--they are mandated by state law." [Footnote 126: Plan Bay Area 2013 at p. 5.] The first mandatory target addresses climate protection by requiring the Bay Area to reduce its per-capita CO2 emissions from cars and light-duty trucks by 7-percent by 2020 and 15-percent by 2035. [Footnote 127: Plan Bay Area 2013 at p. 4-5.] "The second mandatory target addresses adequate housing by requiring the region to house 100 percent of its projected population growth by income level." [Footnote 128: Plan Bay Area 2013 at p. 5; See also Plan Bay Area 2013 at pp. 19, 43 (explaining that SB 375 requires that the Bay Area identify a land use pattern for projected growth (from a 2010 baseline year) that will, inter alia, house 100-percent of the region's projected 25-year population growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents.)]</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board's evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC RWS service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water.</p> <p>Please see Chapter 17, Cumulative Impacts, Growth Inducing Effects and Irreversible Commitment of Resources, for a discussion of growth inducing effects. As noted in that chapter changes in river flows would not remove existing growth-limiting factors (i.e., obstacles to growth), and would not directly or indirectly induce growth.</p> <p>As discussed in Master Response 8.4, Non-Agricultural Economic Considerations and Master Response 8.5, a wide variety of factors influence growth and urban development, or the specific locations of housing, businesses, and development within the plan area and within the Bay Area, one of which may be water supply.</p> <p>Please see Master Response 6.1, Cumulative Analysis, for a discussion of growth inducing effects and housing factors. Similarly, the types of jobs and economic activity associated with the Bay-Area would continue to attract people and the plan amendments would not have an effect on this attraction. As noted in Master Response 8.5, there was no discernible downturn in regional economic activity and housing permits throughout the regional generally continued to increase during the recent 5 year drought period.</p> <p>Plan Bay Area is a regional transportation plan/sustainable communities strategy indicating how regional transportation planning would be implemented and funded throughout the Bay Area. It also offers land use policy suggestions for local governments that, together with transportation investments, will reduce GHG emissions. However, Plan Bay Area does not supersede local land use planning authority, nor are its provisions mandatory requirements for local land use decision-making. In fact, the Housing Element requirements under General Plan Law (Government Code Section 65583, et seq.) direct local planning efforts to provide each city's and county's share of the Bay Area's projected affordable housing need. As such, local jurisdictions would need to amend their General Plans to incorporate feasible actions, such as increased water recycling and water main upgrades to reduce leakage that would enable their Housing Elements to continue to meet their share of that regional housing need.</p> <p>The plan amendments are not required to meet the reduction targets mandated by SB375 and identified in</p>

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Ltr#	Cmt#	Comment	Response
		<p>In order to help achieve the Bay Area’s GHG emissions reduction and housing targets, Plan Bay Area 2013 identifies a land use pattern that "directs new growth within locally adopted urban growth boundaries to existing communities along major transit corridors." [Footnote 129: Plan Bay Area 2013 at pp. 43, 45.]</p> <p>Due to the high cost of housing in the region, for decades "an ever-increasing number of people who work in the Bay Area" have been compelled "to look for more affordable housing in the Central Valley or other surrounding regions." [Footnote 130: Id. at 99; id. at p. 45 (noting that "past trends saw the outward expansion of urban growth in the region and spillover growth in surrounding regions . . ."); See also Draft 2016 SED, at pp. 11-12 ("spillover from the Bay Area is causing growth stress in the San Joaquin Valley as commuters seek affordable housing. Over the past 35 years, the northern San Joaquin Valley, including San Joaquin, Stanislaus and Merced Counties, has experienced explosive growth in the numbers of workers who commute north and west out of the valley each day. By 2010, that was estimated to be about 24 percent of workers working outside their county of residence with about 46,000 heading towards the Bay Area . . .").] To address this incongruity, Plan Bay Area 2013 calls for the majority of projected growth to occur in Priority Development Areas ("PDAs") that are "transit-oriented, infill development opportunity areas within existing communities." [Footnote 131: Id.]</p> <p>Plan Bay Area 2040 is the update to Plan Bay Area 2013, in which the ABAG and the MTC revised regional growth forecast in the Draft Preferred Scenario projects by an estimated additional 1.3 million jobs and 2.4 million people in the Bay Area by 2040. This population increase will require over 800,000 housing units in the Bay Area. [Footnote 132: Memorandum to the Joint MTC Planning Committee/ABAG Administrative Committee at 2 (September 2, 2016) available at http://planbayarea.org/the-plan/Draft-Preferred-Scenario.html.]</p> <p>The 2016 Draft SED fails to account for this population growth and the resulting impacts from water supply shortages to the Bay Area caused by the alternative proposed flows. Not only is there a failure to account for impacts from population growth and increased housing needs as projected by Plan Bay Area as required by Cal. Code Regs., tit. 14, § 15125(d), the 2016 Draft SED fails entirely to account for displaced growth as a result of water shortages to the Bay Area and development moratoriums.</p> <p>"An EIR must discuss growth-inducing impacts from a project." [Footnote 133: Pub. Resources Code, § 21100(b)(5); 14 CCR § 15126(d).]</p> <p>"Depending on the circumstances, a government agency may reasonably anticipate that its placing a ban on development in one area of a jurisdiction may have the consequence, notwithstanding existing zoning or land use planning, of displacing development in other areas of the jurisdiction." [Footnote 134: Muzzy Ranch Co. v. Solano County Airport Land Use Com'n (2007) 41 Cal. 4th 372, 383. ("Muzzy Ranch".)]</p> <p>CEQA broadly defines the relevant geographical environment as "the area which will be affected by a proposed project." [Footnote 135: Pub. Resources Code, § 21060.5." Consequently, "the project area does not define the relevant environment for purposes of</p>	<p>the Plan Bay Area, as the plan amendments are part of a the Bay-Delta Water Quality Control Plan and not an element the Plan Bay Area. The reduction targets are only applicable to Plan Bay Area, and Plan Bay Area is a regional transportation plan indicating how regional transportation planning will be implemented and funded.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, for information regarding compliance with Water Code section 13241.</p> <p>For the reasons described in the master responses cited above and the discussion above, a moratorium on development is speculative.</p> <p>Finally, to the extent the comments contained in this letter reference SFPUC comments or analyses, or are similar to comments contained in the SFPUC letter, please refer to letter 1166 to review responses to that letter.</p>

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Ltr#	Cmt#	Comment	Response
		<p>CEQA when a project's environmental effects will be felt outside the project area." [Footnote 136: County Sanitation Dist. No. 2 of Los Angeles County v. County of Kern (2005) 127 Cal.App.4th 1544, 1582-1583; Muzzy Ranch, 41 Cal.4th 372, 387.]</p> <p>Indeed, "the purpose of CEQA would be undermined if the appropriate governmental agencies went forward without an awareness of the effects a project will have on areas outside of the boundaries of the project area." [Footnote 137: Napa Citizens for Honest Government v. Napa County Bd. of Supervisors (2001) 91 Cal.App.4th 342, 369.]</p> <p>The 2016 Draft SED plan area encompasses the areas where the proposed plan amendments apply to protect beneficial uses. For example, the LSJR flow objectives would require flows in the salmon-bearing tributaries of the LSJR below the rim dams on the Stanislaus, Tuolumne, and Merced Rivers, and the mainstem of the LSJR between its confluence with the Merced River and downstream to Vernalis to protect fish and wildlife beneficial uses in those reaches. [Footnote 138: 2016 Draft SED, Executive Summary, at p. ES-5.] The Bay Area is considered outside of the plan area. The 2016 Draft SED failed to evaluate the likely environmental impacts from increased population and housing needs in the Bay Area while experiencing a decreased water supply proposed by the SED's alternative flows.</p> <p>The imposition of a moratorium on development in the BAWSCA service area would exacerbate the existing housing issues and further push housing growth out of the high-density areas of the Bay Area to the eastern and southern most portions of the Bay Area and to the western San Joaquin Valley. Most of the region's farmlands and natural areas that are threatened by sprawl are in communities at the edges of the region, such as southern Santa Clara County, eastern Contra Costa County, and Solano County. [Footnote 139: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 29.]</p> <p>As explained by ABAG and MTC, past development trends saw the outward expansion of growth within the Bay Area and spillover of growth into surrounding regions, including the Central Valley. [Footnote 140: Plan Bay Area 2013 at pp. 42, 45, 99.] The 2016 Draft SED recognizes that the spillover from the Bay Area will be to San Joaquin Valley, but fails to analyze the environmental impacts from such spillover. [Footnote 141: 2016 Draft SED at pp. 11-12.]</p> <p>Section 13241 of the Water Code requires suitable consideration of "[t]he need for developing housing within the region" and the current analysis in the 2016 Draft SED does not meet this obligation. The 2016 Draft SED discusses growth-inducing impacts, concluding that the potential effects of the LSJR and SDWQ Alternatives on growth would not directly or indirectly foster economic, population, or housing growth; remove obstacles to growth; or facilitate or encourage other such activities. [Footnote 142: 2016 Draft SED at pp. 17-70.] However, it fails to consider the effects of displaced growth as a result of reduced water supplies to the Bay Area, specifically to the RWS.</p>	
1191	50	<p>The 2016 Draft SED fails to analyze the environmental harm from forgoing smart growth strategies and encouraging urban sprawl.</p> <p>The California Department of Finance forecasts that, by 2030, more than 44 million people will live in California, an increase of 30% over the State's population in 2000. [Footnote 143: Cal. Dept. of Finance Projections available at http://www.dof.ca.gov/.] These people will live somewhere. With an anticipated increase in employment and population in the Bay Area,</p>	<p>Please see response to comment 1191-49 regarding growth and housing.</p> <p>It would also be speculative to attempt to quantify the extent and locations of any displaced growth associated with the plan amendments and associated changes in emissions. The effects of the plan amendments on land use changes and resultant carbon storage and sequestration by forests and wetlands is also speculative. In particular, key variables, including carbon cycling, methane production, and nitrogen cycling vary by land use type, season, and site-specific chemical and biological characteristics. Depending on</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>the resulting moratorium on development from the anticipated reduced water supplies in the 2016 Draft SED would result in displaced growth. The individuals filling the increasing number of jobs will need to commute from their homes to their jobs. As a result, it is reasonable to expect that housing development will be pushed to farmlands and open space conservation areas, which are currently threatened by sprawl in response to the Bay Area's affordable housing crisis. [Footnote 144: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 29.] This likely includes land in the periphery of the Bay Area (outside of the RWS), and eastward into western San Joaquin Valley. [Footnote 145: 2016 Draft SED at pp. 11-12.]</p> <p>"Smart Growth" is a development philosophy based on creative development strategies that prioritize the preservation of the environment and critical ecosystems, improving water and air quality, and leveraging existing development to create compact, transit-oriented development with diverse housing choices. [Footnote 146: See EPA web page entitled "What is Green Infrastructure?" available at https://www.epa.gov/green-infrastructure/what-green-infrastructure (explaining that "Green infrastructure uses vegetation, soils, and other elements and practices to restore some of the natural processes required to manage water and create healthier urban environments. At the city or county scale, green infrastructure is a patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the neighborhood or site scale, stormwater management systems that mimic nature soak up and store water.").]</p> <p>Comprehensive Smart Growth policies create neighborhoods where high quality walking, cycling, public transit and car-sharing services allow households to minimize their vehicle ownership and use. [Footnote 147: Todd Litman. 2015. "Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics." Victoria Transport Policy Institute at p. 3 available at http://www.vtpi.org/sg_save.pdf.] Smart Growth tends to increase economic development, including productivity, business activity, property values and tax revenues. [Footnote 148: Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics. Victoria Transport Policy Institute at p. 29.]</p> <p>Smart Growth can positively affect housing affordability by supporting more affordable housing types and can reduce development fees and taxes for more compact development, reflecting the lower costs of providing public services. [Footnote 149: Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics. Victoria Transport Policy Institute, at p. 16.]</p> <p>The Bay Area has adopted Smart Growth strategies to protect the environment, preserve public health, and to build more diverse communities. Bay Area residents have consistently chosen Smart Growth approaches over suburban sprawl and displaced growth. In 2014 alone, six Bay Area cities either rejected measures that would have curtailed Smart Growth strategies or approved measures to reinforce Smart Growth approaches. [Footnote 150: San Francisco Bay Area Planning and Urban Research Association (SPUR), Bay Area Voters Approve Smart Growth, Reject Sprawl, November 12, 2014 available at http://www.spur.org/news/2014-11-12/bay-area-voters-approve-smart-growth-reject-sprawl.] Displaced growth, largely low-density and dispersed, would have different and far greater impacts than those associated with the high-density, infill development in the existing RWS area.</p>	<p>these conditions, any land use change may result in a net increase or decrease in GHG emissions. Additional information related to acreage by land use type, site-specific land characteristics (e.g., salinity, pH, age of trees, type of grass, carbon content of soils), and fuel consumption data would be required to estimate the net difference in emissions between the removal and addition of GHGs into the atmosphere (i.e., GHG flux). Without local sampling and monitoring data, these values are unknown. An analysis of potential GHG emissions from land use changes that could result from the plan amendments depends on information that is unknown at this programmatic level of analysis; therefore, it is not provided in the SED. Please refer to Master Response 1.1, General Comments, regarding the approach to analyses and the substantial evidence standard. Also, please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding substantial evidence and speculation.</p> <p>Furthermore, the plan amendments do not affect the ability of local agencies to require or encourage infill development, and to discourage conversion of lands now in agriculture or wildlands to urban use. Similarly, the plan amendments do not have any effect on transit or transit-oriented development. Changes to adopted land use plans are not proposed in response to implementation of the plan amendments. Any loss of open space, forests, or agriculture would still remain under the jurisdiction of the controlling land use or resource agency.</p>

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Ltr#	Cmt#	Comment	Response
		<p>In the Bay Area, 293,100 acres of natural and agriculture land are at risk from sprawl development over the next 30 years as a result of existing increased housing costs and incentives to build on green belt land around the region. The most acute threat exists to 63,500 acres that will likely be developed in the next 10 years. [Footnote 151: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at pp. 3, 8.] The existing threats to these natural and agriculture land as a result of urban sprawl and the resulting environmental impacts that will be exacerbated as a result of water shortages to the RWS were not adequately analyzed in the 2016 Draft SED. The Bay Area has a total of 2.3 million acres of agricultural land, 1.8 million acres of lands that provide water resources (watersheds and wetlands), and 2.5 million acres of lands that function as wildlife habitat, corridors, and areas rich in biodiversity. Not only were the environmental impacts resulting from development of this land not considered in the 2016 Draft SED, but the SED failed entirely to consider the reduced environmental benefits from forgoing smart growth while encouraging urban sprawl.</p> <p>Urban Sprawl has two primary impacts: 1) it increases per capita land consumption, and 2) it disperses development, which increases the distances between common destinations, increasing the costs of providing public infrastructure and services, and the transportation costs required to access services and activities. [Footnote 152: Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics. Victoria Transport Policy Institute at p. 5.]</p> <p>As shown in Figure 19 [ATT19] the primary impacts have a number of secondary impacts and economic costs including reduced agricultural production and ecological services; increased infrastructure and transport costs borne by governments, businesses and households; reduced economic productivity, reduced economic opportunities for disadvantaged people; more traffic congestion and accidents, higher per capita energy consumption and pollution emissions, plus reduced public fitness and health. The 2016 Draft SED fails to adequately analyze the impacts of this displaced low-density growth.</p> <p>The California Legislature recognizes the social and environmental values of green infrastructure. [Footnote 153: See Gov. Code, § 65593(d) ["[L]andscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development."].] The proposed reduced flows in the 2016 Draft SED will cause displaced growth and suburban sprawl, forgoing the numerous benefits of the Smart Growth strategies favored by residents of the Bay Area. Smart Growth strategies, and compact development in particular, have numerous environmental benefits. The benefits from natural landscapes include: 1) clean, plentiful drinking water, 2) protections from floods and storms, 3) food production and food security, 4) building and medicinal materials, 5) carbon storage and climate regulations, 6) recreation and tourism, health benefits from clean air and recreational opportunities. [Footnote 154: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 27.]</p> <p>Potentially significant project effects on energy consumption, human health, water quality, air quality, and, more specifically, greenhouse gas emissions, must be analyzed under CEQA. [Footnote 155: Pub. Resources Code, § 21100(b)(1); Cal. Code Regs., tit. 14, § 15064.4(b).] The 2016 Draft SED does not compare the impacts of displaced growth with the impacts of planned Smart Growth strategies in San Francisco and its immediate adjacent neighboring communities.</p>	

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
1191	51	[ATT19: Figure 19: Sprawl Resource Impacts.]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1191	52	<p>Displaced growth outside the RWS service area will impact water quality and water supplies.</p> <p>The CEQA Guidelines require identification of project effects that will substantially degrade water quality. [Footnote 156: See CEQA Environmental Checklist Form, Appendix G, VIII(f), available at http://resources.ca.gov/ceqa/guidelines/Appendix_G.html.] Impacts to water supply and water quality from displaced urban sprawl would include: 1) wasted water from less efficient pipes required to serve low-density suburban areas, 2) water pollution from increased driving as particles from tailpipes, tires, and breaks are deposited on roadways, leaving a toxic residue that is captured and washed into waterways by rainfall, 3) and increased stress on the water supplies of hotter inland counties, which already have substantially higher per-capita water use than the Bay Area.</p> <p>"Roads and parking lots can account for as much as 70 percent of the total impervious cover in most urban areas and can easily capture pollution from vehicles." [Footnote 157: EPA. 2013. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality" at 51 available at https://www.epa.gov/sites/production/files/2014-03/documents/our-built-and-natural-environments.pdf (hereinafter "A Technical Review").] Based on data collected by the National Stormwater Quality Database, "open space shows consistently low concentrations of all pollutants and other constituents examined." [Footnote 158: A Technical Review.] In contrast, residential areas have the highest concentrations of dissolved and total phosphorus and high levels of fecal coliform. [Footnote 159: A Technical Review.] "Highway drainage has the highest concentrations of total suspended solids, chemical oxygen demand . . . oil and grease, and ammonia." [Footnote 160: A Technical Review at p. 52.] Compact development reduces the amount of impervious surface, which results in less stormwater runoff. [Footnote 161: https://www.epa.gov/smartgrowth/smart-growth-and-water.] Urban sprawl threatens open spaces and, in turn, harms water quality.</p> <p>Urban sprawl also has the potential to impact local drinking water supplies, which will already be stressed as a result of the reduced flows anticipated in the 2016 Draft SED. The farmlands and natural areas within the Bay Area that are at risk from sprawl capture rainwater and replenish the region's groundwater supplies. 46 billion gallons of water are at risk from potential development in the Bay Area's natural areas and farmlands. [Footnote 162: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 28.] Floodplains, in particular, protect water quality, reduce sedimentation, and reduce flood risk on other properties by storing and better conveying floodwaters. [Footnote 163: Batker, D., Schwartz, A., Schmidt, R., Mackenzie, A., Smith, J., Robins, J., 2014. Healthy Lands & Healthy Economies: Nature's Value in Santa Clara County at p. 13. (2014) available at http://www.openspaceauthority.org/about/pdf/NaturesValue_SCC_int.pdf.]</p> <p>As drought conditions and water scarcity becomes the norm, the Bay Area will become more reliant on its local water resources. [Footnote 164: Madsen, J., Being Smarter About Land Use Can Help Fight Against Drought, San Jose Mercury News, November 11, 2015, available at http://www.mercurynews.com/2015/11/11/jeremy-madsen-being-smarter-about-land-use-can-help-fight-against-drought/.] Low-density development threatens the 1.2 million acres of watershed and groundwater infiltration zones. [Footnote 165: Madsen, J., Being Smarter About Land Use Can Help Fight Against Drought, San Jose Mercury News, November 11, 2015.] Reduced urban sprawl development will help prevent the common</p>	<p>Please see the response to comments 1191-49 and 1191-50 regarding growth and development. For the reasons identified in that response and the master responses referenced therein, it is speculative to assume that the plan amendments will ultimately result in displaced growth patterns that would in turn result in the conversion of permeable surfaces to impermeable surfaces and water quality impacts. See also Master Response 8.5 for a discussion of groundwater use. In addition, because it is speculative to assume with any degree of certainty how potential water rationing and water use restrictions would affect displacement of development from the Bay-Area and SFPUC RWS service area to other parts of California, it is further speculative to analyze changes in per capita water use as a result of such displacement.</p>

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		<p>harms to our water resources, such as saltwater intrusion in rivers and aquifers and land subsidence. [Footnote 166: Deborah L. Myerson. 2002. "Water and the Future of Land Development" at p. 2 (2002) available at http://uli.org/wp-content/uploads/2012/07/Water_LandDev.ashx_.pdf.]</p> <p>A number of BAWSCA agencies will depend more on local groundwater supplies as a result of the predicted water supply shortages in the 2016 Draft SED. Not only will these groundwater supplies be impacted as a result of potential over use, but the anticipated urban sprawl may impact the quality of this water source. "For example, a study of how land use affects water quality of an aquifer in east-central Minnesota found that sewer residential and commercial or industrial areas had higher concentrations of total dissolved solids—including calcium, potassium, sulfate, and magnesium- relative to agricultural, unsewered residential, or undeveloped areas." [Footnote 167: EPA. 2013. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality" at p. 53 available at https://www.epa.gov/sites/production/files/2014-03/documents/our-built-and-natural-environments.pdf.]</p> <p>Undeveloped Bay Area lands catch and filter rain, replenishing groundwater supplies. But this service is threatened by development; if lands are paved over, they cannot collect water. [Footnote 168: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 28.] Groundwater is a critical issue in California's long drought where groundwater is a source of drinking water. The reduced groundwater infiltration and impacts to water quality will negatively impact local agencies ability to achieve groundwater sustainability in compliance with the Sustainable Groundwater Management Act (SGMA). [Footnote 169: Wat. Code, §10720.]</p> <p>Displaced growth outside of the RWS service area will not only impact water quality, but will also put increased stress on water supplies. People living in the hotter inland counties have substantially higher per-capita water use than those living in more urbanized coastal areas. Unlike the Smart Growth within the RWS service area, characterized by dense, compact housing, inland areas generally have single family homes on large lots. These larger lots have higher water use—especially outdoor water use. In fact, outdoor water demand for typical residential lots in an inland area is between two and three times higher than in the more compactly developed areas that make up most of the RWS service area. [Footnote 170: San Francisco: Public Policy Institute of California. Hanak, Ellen, and Matthew Davis. 2006. "Lawns and Water Demand in California." California Economic Policy available at http://www.ppic.org/content/pubs/cep/EP_706EHEP.pdf.]</p> <p>The 2016 Draft SED does not adequately analyze the environmental impacts of low-density development, specifically to water quality and water supplies, driven by displaced growth.</p>	
1191	53	<p>Displaced growth outside of the RWS service area will create increased air pollution, CO2 emissions and global warming.</p> <p>In looking at the increasingly dramatic effects of climate change, Smart Growth strategies, which focus on energy-efficient buildings, compact development, and preserving open space, can mitigate the effects of climate change by reducing vehicle use and emissions and by sequestering CO2. [Footnote 171: EPA at http://www.epa.gov/smartgrowth/smart-growth-and-climate-change.] The CEQA Guideline on Determining the Significance of Impacts from Greenhouse Gas Emissions provides that a lead agency should attempt to</p>	<p>Please see the response to comments 1191-49 and 1191-50 regarding growth and development. For the reasons identified in those responses and the master responses referenced therein, it is speculative to assume that the plan amendments will ultimately result in displaced growth patterns that would in turn result in increases in GHG emissions and other air quality impacts.</p> <p>The plan amendments do not affect the ability of local agencies to require or encourage infill development, and to discourage conversion of lands now in agriculture or wildlands to urban use. Similarly, the plan amendments do not have any effect on transit or transit financing.</p>

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		<p>"describe, calculate or estimate" the amount of greenhouse gases the project will emit, but recognizes that agencies have discretion in how to do so. [Footnote 172: Cal Code Regs., tit. 14, § 15064.4(a); Center for Biological Diversity v. California Dept. of Fish and Wildlife (2015) 62 Cal.4th 204, 217, as modified on denial of reh'g (Feb. 17, 2016).]</p> <p>People driving to the fringes of the Bay Area and inland counties will increase vehicle miles traveled as employees are required to drive long distances from their homes to their places of employment. Sprawling development is "car-dependent" and residents not only must make long commutes to work, but drive more to meet daily needs. [Footnote 173: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 29.] People living in these areas will rely on their vehicles for both commuting and everyday responsibilities. [Footnote 174: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 29.] "More than 38 percent of national carbon monoxide emissions and 38 percent of nitrogen oxide emissions come from highway vehicles." [Footnote 175: EPA. 2013. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality" at 58 available at https://www.epa.gov/sites/production/files/2014-03/documents/our-built-and-natural-environments.pdf.]</p> <p>Sprawl also impacts air quality trends. A 2008 study found that "most sprawling cities were found to experience over 60% more high ozone days than most compact cities." [Footnote 176: Brian Stone Jr. 2006. "Urban Sprawl and Air Quality in Large U.S. Cities." Journal of Environmental Management 86 (2008) 688-698 at p. 689 available at http://urbanclimate.gatech.edu/pubs/Urban%20Sprawl%20and%20AQ_Stone2.pdf.]</p> <p>A 2007 Urban Land Institute Study found that "compact development has the potential to reduce [vehicle miles traveled] per capita by anywhere from 20 to 40 percent relative to sprawl." [Footnote 177: Urban Land Institute, Growing Cooler: The Evidence on Urban Development and Climate Change, at p. 1.7.2 (2007) available at https://www.nrdc.org/sites/default/files/cit_07092401a.pdf.] Specifically, as it pertains to vehicle emissions, people living in highly walkable communities drive 26 fewer miles per day than people living in sprawling communities. [Footnote 178: Urban Land Institute, Growing Cooler: The Evidence on Urban Development and Climate Change, at p. 17 (2007) available at https://www.nrdc.org/sites/default/files/cit_07092401a.pdf.]</p> <p>Smart growth could, by itself, reduce total transportation-related CO2 emissions from current trends by 7 to 10 percent as of 2050. [Footnote 179: Growing Cooler: The Evidence on Urban Development and Climate Change, at p. 21.] If 60 percent of growth is directed to compact development, this would save 85 million metric tons of CO2 each year as of 2030. [Footnote 180: Growing Cooler: The Evidence on Urban Development and Climate Change, at p. 21.] Smart Growth also reduces per capita energy consumption and pollution emissions by reducing infrastructure requirements, building energy use and vehicle travel. [Footnote 181: Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics. Victoria Transport Policy Institute available at http://www.vtpi.org/sg_save.pdf at p. 27.]</p> <p>Furthermore, to reduce greenhouse-gas emissions, it is critical to increase opportunities for public transportation. Clearly the number of miles driven impacts air pollution, but "the amount of infrastructure needed to accommodate cars contributes to air pollution regardless of the number of miles driven. A study that computed the lifecycle emissions of sulfur dioxide and PM10 for cars showed that adding parking lot construction and maintenance to the calculations raises emissions by as much as 24 percent and 89 percent</p>	<p>Chapter 14, Energy and Greenhouse Gases, presents the analysis of GHG emissions from the plan amendments and Master Response 3.7, Greenhouse Gas Emissions and Analysis, provides clarifying information.</p>

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		<p>respectively. [Footnote 182: Technical Review at p. 58.] Energy use in road construction was found to equal "the energy used by traffic on the road for one to two years." [Footnote 183: Technical Review at p. 58.] Prioritizing opportunities for public transportation and foregoing sprawl should minimize these impacts. Public transportation ridership depends upon population and job concentration near transit stops. Both of which would be adversely impacted by displaced growth. Land within walking distance of public transportation is precious. Such a scarce resource should be fully utilized and leveraged.</p> <p>The Bay Area's lands store 111 million tons of carbon, helping to regulate and protect the climate. [Footnote 184: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 27.] Development in natural lands in the Bay Area will result in a release of carbon into the atmosphere and reduced ability to sequester carbon. As an example, 750,000 acres of oak forest and woodland are at risk of elimination by 2040. [Footnote 185: Tom Gaman, 2008. "An Inventory of Carbon and California Oaks." California Oak Foundation at 5 available at http://californiaoaks.org/wp-content/uploads/2016/04/CarbonResourcesFinal.pdf.] In Santa Clara County alone, oak forests and oak woodlands sequester 3,577,048 metric tons of carbon. [Footnote 186: Tom Gaman, 2008. "An Inventory of Carbon and California Oaks." California Oak Foundation at 2 and 4.]</p> <p>Development that eliminates oak forest and woodland areas in Santa Clara and other counties will result in a release of the carbon sequestered by these trees and will reduce our ability sequester carbon in the future. Displaced growth and urban sprawl into the Bay Area's greenbelt places at risk landscapes that store more than 6 million metric tons of carbon. The development of these lands would release the equivalent amount of carbon as putting 1.3 million cars on the road every year. [Footnote 187: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 28. (2017); California Landscape Conservation Cooperative, U.S. Geological Survey. 2014. California Basin Characterization Model. https://ca.water.usgs.gov/projects/reg_hydro/projects/dataset.html.]</p> <p>The 2016 Draft SED must analyze these air quality impacts.</p>	
1191	54	<p>Displaced growth outside of the RWS service area will impact wildlife and recreation preservation.</p> <p>Under CEQA, the lead agency must analyze potentially significant adverse environmental effects resulting from loss of open space, forests, habitat and agriculture. [Footnote 188: Pub. Resources Code, § 21100(b)(1); see also Appendix G of the CEQA Guidelines [requiring lead agency to identify potentially significant adverse environmental effects resulting from conversion of farmland to non-agriculture use.].) Available at http://resources.ca.gov/ceqa/guidelines/Appendix_G.html.] Compact development better protects open space, parks, and critical ecosystems than disjointed, reactionary preservation approaches. While preserving critical land, reactionary preservation approaches create small conservation areas, which do not function well as wildlife corridors and are not as accessible to residents. [Footnote 189: EPA at https://www.epa.gov/smartgrowth/smart-growth-and-open-space-conservation.]</p> <p>One of the four comprehensive objectives of Plan Bay Area 2013 is to conserve open space, natural resources and agriculture lands in the region by concentrating new development in existing urban areas and locally adopted urban growth boundaries. [Footnote 190: Plan Bay Area 2013 at pp. 42, 45.] To this end, Plan Bay Area 2013 identifies "over 100 regionally significant open spaces about which there exists broad consensus for long-term protection</p>	<p>Please see response to comment 1191-49 regarding growth and development. For the reasons identified in that response and the master responses referenced therein, it would be speculative to assume with any degree of certainty how potential increased water rationing and water use restrictions would affect urban development, and subsequently, the loss of open space, forests, natural habitat or farmland in the Bay Area and then subsequently the potential effect on sensitive species. Furthermore, changes to adopted land use plans are not proposed in response to implementation of the plan amendments. Any loss of open space, forests, or agriculture would still remain under the jurisdiction of the controlling land use or resource agency.</p>

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		<p>but which face nearer-term development pressures." [Footnote 191: Plan Bay Area at p. 45.] Rather than a preservation strategy that protects the "last" of an important open space area, Smart Growth strategies create and preserve more valuable and functional open space areas. [Footnote 192: EPA at http://epa.gov/smartgrowth/smart-growth-and-open-space-conservation.]</p> <p>Under CEQA, a "potential substantial impact on endangered, rare or threatened species is per se significant." [Footnote 193: Cal. Code Regs., tit. 14, § 15065(a)(1); Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova (2007) 40 Cal.4th 412, 449, as modified (Apr. 18, 2007).] At present, 293,100 acres of natural and agricultural lands in the Bay Area "are at risk of sprawl development over the next 30 years. . . . The total land at risk is about 458 square miles, nearly 10 times the size of San Francisco." [Footnote 194: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 3.] "Habitat destruction and degradation contribute to the endangerment of more than 85 percent of the species listed or formally proposed for listing under the federal Endangered Species Act." [Footnote 195: EPA. 2013. "Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality" at p. 53 available at https://www.epa.gov/sites/production/files/2014-03/documents/our-built-and-natural-environments.pdf.]</p> <p>When urban development results in loss of open space, forests, and natural habitats, both plant and animal species are at risk as they are pushed out of their natural habitats. Coyote Valley in Santa Clara County functions as a rare and critical corridor for wildlife including coyotes, bobcats, and foxes. [Footnote 196: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 21.] In Alameda County, development on wetlands threatens endangered salt march harvest mice, birds, and burrowing owls. [Footnote 197: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 11.] Contra Costa County is home to 41 percent of the Bay Area's at-risk Critical Habitat and is home to burrowing owls, kit foxes, and other species. [Footnote 198: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 13.] The future of these and other rare species depends on the counties' growth decisions. [Footnote 199: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 13.]</p> <p>The 2016 Draft SED fails to include any analysis of the reasonably foreseeable loss of open space, forests, habitat and agriculture that will result from displacement of growth in the urban core in the Bay Area assuming CCSF is responsible for bypassing flows in compliance with LSJR Alternatives 3 or 4.</p>	
1191	55	<p>Failure to analyze the impacts of displaced growth outside of the RWS ignores the economic benefits that result from high density development.</p> <p>Communities built on farm land and natural areas pay more for infrastructure and services including water, roads, sewers, libraries, parks and recreation, and governance. For example, annual per-household costs for roads can be 4,000 percent more in sprawling areas than in dense communities. Further, services cost more and serve fewer. A fire station in a low-density neighborhood serves just one-quarter of households at four times the cost of one in a more compact neighborhood. [Footnote 200: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 30.] The cost of infrastructure for compact neighborhoods can be as much as 20-50% less than low density areas. [Footnote 201: "Close to Home: The Benefits of Compact, Walkable, Transit-Friendly Neighborhoods." at 4 (2016) available at http://www.pembina.org/reports/closetohome-final.pdf.]</p>	<p>Please see response to comments 1191-49 and 1191-50 regarding growth and development. For the reasons identified in that response and the master responses referenced therein, it would be speculative to assume that implementation of the plan amendments would result in businesses locating elsewhere outside of the Bay Area, or growth being displaced from the Bay Area, given that water supply is not the only limiting factor on growth in San Francisco and the Bay Area.</p>

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		<p>More compact development reduces the length of roads and utility lines, and travel distances needed to provide public services such as garbage collection, policing, emergency response, and school transport. [Footnote 202: Todd Litman. 2015. "Understanding Smart Growth Savings: Evaluating Economic Savings and Benefits of Compact Development, and How They Are Misrepresented By Critics." Victoria Transport Policy Institute at p. 12, available at http://www.vtpi.org/sg_save.pdf.] Additionally, compact housing can be served by shorter water pipes, resulting in less lost water due to leaking pipes. [Footnote 203: EPA at https://www.epa.gov/smartgrowth/smart-growth-and-water.]</p> <p>Furthermore, developing in farm land and natural areas eliminates the natural value and benefit that these farm and natural areas currently provide. In Santa Clara County, a recent comprehensive study added up the economic value provided by the county's natural landscapes. It found that the benefits people obtain from ecosystems--filtering water, growing food, providing recreation opportunities, and more--are worth up to \$3.9 billion per year. The county's natural capital--the infrastructure that provides these benefits--is worth up to \$386 billion. [Footnote 204: At Risk: The Bay Area Greenbelt: 2017 Greenbelt Alliance at p. 26; David Batker, Aaron Schwartz, Rowan Schmidt, Andrea Mackenzie, Jake Smith, and Jim Robins. 2014. "Nature's Value in Santa Clara County." Earth Economics and the Santa Clara Valley Open Space Authority available at http://www.openspaceauthority.org/about/pdf/NaturesValue_SCC_int.pdf.]</p> <p>There are also social costs related to greater reliance on vehicles associated with low-density development. These social costs include air pollution, GHG emissions, noise pollution, increased traffic congestion and delays, and vehicle collisions. [Footnote 205: David, Thompson. 2013. "Suburban Sprawl: Exposing Hidden Costs, Identifying Innovations." Sustainable Prosperity at p. 6 available at http://thecostofsprawl.com/report/SP_SuburbanSprawl_Oct2013_opt.pdf.] A 2006 study found that the social costs of road transportation in Canada cost \$39.82 billion in that year. [Footnote 206: Bruno Jacques. 2011. "Estimates of the Full Cost of Transportation in Canada: An Overview. Mobility Pricing Conference at p. 20 available at http://www.transportfutures.ca/sites/default/files/FCI_Mobility_Pricing_2010.pdf.] The cost of air pollution and GHGs alone in 2006 was \$17.81 billion.</p> <p>The failure of the 2016 Draft SED to consider the impacts of displaced growth as compared to growth in San Francisco and its neighboring communities does two things: (1) it fails to adequately identify significant impacts that must be considered as part of a decision, and (2) discounts the significant environmental benefits of the execution of Smart Growth strategies in the Bay Area and overlooks the comparative environmental harms of sprawl. The proposed reduction in water supplies to the Bay Area could result in a moratorium on development and negatively impact the implementation of the Bay Area's Smart Growth strategies. As the proposed water supply reduction likely will not impact the anticipated regional growth, this growth will be pushed out of the periphery of the Bay Area and San Joaquin Valley resulting in greater suburban sprawl and forgoing the environmental benefits of the Plan Bay Area and Smart Growth strategies.</p>	
1191	56	<p>The 2016 Draft SED fails to analyze the impacts disadvantaged communities in the Bay Area.</p> <p>The California Department of Water Resources defines disadvantaged communities (DACs) as communities with an annual median household income (MHI) less than 80 percent of the statewide average. [Footnote 207: California Department of Water Resources Disadvantaged Communities (DAC) Mapping Tool available at</p>	<p>Please see Master Response 8.4, Non-Agricultural Economic Considerations, for responses to comments regarding rate effects. Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, provides responses to comments regarding regional economic activity. Master Response 1.1, General Comments, provides information regarding the program-level analysis in the SED.</p>

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		<p>http://www.water.ca.gov/irwm/grants/resources_dac.cfm.) As part of the development of the Bay Area Integrated Regional Water Management Plan (IRWMP) which was last updated in September of 2013, DACs were identified in three BAWSCA Member Agency service areas (East Palo Alto, Redwood City, and the City of Hayward) as based on 2010 U.S. Census track data. [Footnote 208: Final 2013 Bay Area Integrated Regional Water Management Plan available at: http://bairwmp.org/docs/2013-bairwm-plan-update/2013-final-plan/final-bairwmp-2013; DAC Maps for the Bay Area IRWM Subregions available at http://bairwmp.org/dac/dac-info.]</p> <p>As officials from East Palo Alto highlighted in their comment letter to the SED, there is significant concern that, due to limitations on water supply, they will need to use fines and/or penalties to enforce lower water use, and that such practices could prove to be a significant burden to their lower-income residents. [Footnote 209: See East Palo Alto Comment Letter on the 2016 Draft SED.] The City of Hayward detailed how the SED could negatively impact the economic health of area residents and businesses. [Footnote 210: See City of Hayward Comment Letter on the 2016 Draft SED.] Redwood City commented that the SED could result in displacement of jobs and residents to other parts of California. [Footnote 211: See Redwood City Comment Letter on the 2016 Draft SED.] That displacement of residents would likely hit their low-income population to a greater degree.</p> <p>Aside from the above noted impacts to identified DACs, in broader terms, the impacts of the SED on the regions lower income residents could be significant. ABAG is currently in the process of preparing their plans for the future growth of the Bay Area (through their Plan Bay Area 2040 efforts). Developed as part of their draft preferred land use scenarios, as released in the fall of 2016, it is noted that areas served by BAWSCA member agencies must allow for the inclusion of additional low income housing, particularly along key transportation corridors. Without that inclusion, low-income residents risk having to move outside of the region. [Footnote 212: Plan Bay Area 2040 Final Preferred Scenario Approved available at http://planbayarea.org/news/news-story/plan-bay-area-2040-final-preferred-scenario-approved.] Growth moratoriums that many BAWSCA member agencies have expressed they will need to implement to accommodate the SED directly limit the ability of the region to address those ABAG-proposed set-asides.</p>	
1192	1	<p>Pumping groundwater to mitigate the effects of this SED knowingly conflicts with your implementation of the Sustainable Groundwater Management Act (SGMA). This SED will increase the overdraft and reduce groundwater recharge, further reducing groundwater quality. The Board, as the regulator, must be consistent when implementing this SED and SGMA. Both the Board and the residents in the three counties know there will be less ground water pumped in the future even before the unimpaired flow proposal is considered.</p>	<p>The existing groundwater overdraft conditions in the plan area are legacy issues caused by unsustainable agricultural expansion; SGMA was passed by the legislature in 2014 to address overdraft issues. The State Water Board also has a legal mandate to reasonably protect fish and wildlife beneficial uses, which the State Water Board is proposing to do with the plan amendments. The State Water Board acknowledges it will be challenging, but SGMA compliance cannot occur at the expense of reasonably protecting surface water beneficial uses; both groundwater and surface water must be protected.</p> <p>The SED and plan amendments do not require or encourage increases in groundwater pumping as a response to reductions in surface water. The SED merely reflects the historical response of water users to increase groundwater pumping when surface water availability is reduced. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA. Comprehensively addressing both resources allows for integrated planning that does not trade impacts between surface and groundwater.</p> <p>For further discussion on groundwater overdraft as a legacy issue, groundwater recharge, and compliance with SGMA in response to implementation of the plan amendments, please see Master Response 3.4, Groundwater Resources and the Sustainable Groundwater Management Act,</p>

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			<p>For a discussion on why the pre-existing conditions related to water supply and water quality would not be exacerbated by the plan amendments and information regarding financial and technical assistance programs available to assist disadvantaged communities to implement new water supply projects or to comply with SGMA, please see Master Response 2.7, Disadvantaged Communities.</p> <p>Please see Master Response 3.6, Service Providers, for a discussion on the reason why the LSJR flow objectives would not jeopardize municipal water supply.</p>
1192	2	<p>The permanent impacts on the Central Valley economy in the dry years are not recaptured in the wet years, as a statement of simple averages implies. The SED Chapter 21 description of average "significant and unavoidable impacts" are misleading. The average of 14% water reduction sounds innocuous but the impacts in the critically dry years will be severe and permanent.</p>	<p>Please see Master Response 2.3, Presentation of Data and Results in the SED and Response to Comments, regarding the cumulative distributions presented in the impact analyses and the use of cumulative distributions to identify dry and critically-dry years. Please see Master Response 3.5, Agricultural Resources, regarding the criteria used to evaluate impacts on agricultural resources. Please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, regarding agricultural economic effects.</p> <p>Chapter 21, Drought Evaluation, describes the effects of LSJR alternatives during dry-year sequences, using the 1922-2015 historical runoff sequence. This evaluation identifies that two out of 10 years will have runoff less than 50 percent of average runoff, and four of 10 years will have runoff less than 75 percent of average runoff (Table 21-2). The evaluation also recognizes that impacts on water supply increase dramatically during dry-year sequences.</p> <p>Tables 21-4a, 21-4b, and 21-4c show the reductions from full diversions that occur in baseline conditions and for each LSJR alternative by tributary. The tables show the average water supply reductions (deficits), but also show the percentage of years with water supply deficits, indicating that existing deficits are greatest in dry-year sequences (with depletion of storage) and become greater for higher percent unimpaired LSJR flow objectives.</p>
1192	3	<p>The SED does not disclose the loss of usable stored water as a direct result of this proposal. The SED does not address the new requirement to store water to maintain lower water temperature for fish.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for clarification of the program of implementation and discussion of carryover storage.</p>
1192	4	<p>The SED impact appears to be aimed at those who are less fortunate. There will be great harm done, to those working on the front line of production agriculture. The most impacted people will be those with less formal education, and their children.</p> <p>Stanislaus and Merced Counties already include areas where 35% of the population live below the poverty level. The SED projected a \$60 million negative economic result. Other professional studies place the loss at many times that amount. What amount of socio-economic loss, is needed to re-evaluate human cost?</p>	<p>The State Water Board is committed to environmental justice. The proposed plan amendments do not discriminate against people on the basis of race, color, culture or income.</p> <p>The State Water Board is aware that Stanislaus and Merced Counties have a large population living in disadvantaged communities (DACs). Please see Master Response 2.7, Disadvantaged Communities, regarding the plan amendments as they relate to DACs, consideration of DACs in the SED, and the State Water Board's technical and financial assistance programs for DACs.</p> <p>The estimate of the reduction in total economic output relate to agricultural production due to the proposed LSJR flow objectives in the SED is different from those estimated by other professional studies because the other professional studies used different assumptions and inputs. For further discussion regarding the potential regional agricultural economic effects of the plan amendments and explanation of the modeling assumptions used to estimate the effects, please see Master Response 8.2, Regional Agricultural Economic Effects.</p>
1192	5	<p>Reducing water for forage crops will eliminate those crops and income they generate. The loss of forage crops will reduce the acres needed to feed and manage the nutrient levels in the dairy industry. The dairy herds located in Merced, Stanislaus, and San Joaquin Counties, yield a nutrient level requiring an estimated 390,000 acres of growing forage crops for</p>	<p>Please see Chapter 11, Agricultural Resources, Section 11.4.2, Lower San Joaquin River Watershed and Eastside Tributaries: Other Agricultural Production, and Impact AG-2, and Master Response 3.5, Agricultural Resources, for information on forage crops and nutrient management and dairy waste disposal. The information presented in this comment does not make a general comment regarding the plan amendments</p>

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		utilization. This effect on the Dairy Industry is not addressed in the SED.	or raise significant environmental issues. Please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, and Appendix G, Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results, for information regarding SWAP and changes in cropping patterns to forage crops. Please see Master Response 8.2, Regional Agricultural Economic Effects, regarding silage, dairy feed, and the potential economic effects on dairies.
1192	6	<p>The State Water Resource Proposal put forward will drastically alter the momentum that ag has brought to the economy of our region. While I say momentum it is with the perspective that our 2 county area still today wrestles with 25% + of the people are living below the national poverty level.</p> <p>This proposal will increase our risk as a local ag lender. What does that mean to people in our area:</p> <ul style="list-style-type: none"> - The families that depend on ag for their income, including the employees, suppliers, and employers, cannot sit out of farming during dry years and jump back in when there is water. Many of these employers own one parcel and rely wholly on District water. The impact will be felt by the small family employers. Most of them don't have the opportunity to lay off employees this year, let some or all of the ground lay fallow and restart the following year. In addition, our loans require monthly or annual payments. The investors that buy our bonds (which is where we get our money to lend) are not going to let us skip a payment in a dry or critically dry year. - Employers who produce milk do not have the option of simply shutting down like a factory. Cows need to be cared for each day. Dairies are required to have more acres rather than less acres or reduced acreage due to a potential fallowing situation. - Irrigated orchards that last 25-40 years cannot be dry farmed in the off years. Trees decrease in production and eventually die without water. - Reducing the water supply will also hurt supporting industries in our area. Jobs for farm labor, feed companies, nurseries that grow trees, and labor at dairy and nut processing facilities will also be negatively impacted. Our local economy will be challenged with even higher unemployment. - In addition, businesses that financially support farming in Stanislaus and Merced Counties will need to reassess the risk of extending credit in an area that lacks a reliable source of water. Our ag employers who hire people, buy seed, equipment, and other inputs have a high risk in this business if they do not know if there will be enough water to finish the growing season. - Higher risk i.e. a less reliable water source will result in higher cost and less available capital for our employers. The laws of economics will mean higher interest rates for higher risk. <p>On average in the state of California it may not be a problem. It will be a problem in this area.</p>	<p>Though the comment presents several facts related to agricultural industries and the plan area economy, it does not raise a significant environmental issue with the SED. Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments and general information regarding the economic analysis. Furthermore, please see Appendix G, Agricultural Economic Effects of the Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results, for estimates of the magnitude of the effects on industry revenue and employment.</p>
1192	7	<p>These are some of the direct impacts to the people that we finance. There are also other impacts.</p> <ul style="list-style-type: none"> - Without our current water supply we will see 4th and 5th generation businesses shut 	<p>The SED is a programmatic document, and the economic analysis accurately estimates the reasonably foreseeable economic effects of the LSJR alternatives for the region in a general sense. It is beyond the scope of the analysis to determine precisely how impacts will be distributed geographically.</p>

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		<p>down-some of them will be in the production of food and fiber. Some of them will be on main street that support the farming employers in our area. Our younger, smaller farmers and their employees are the most vulnerable. They can't afford to drill an expensive well. They can't afford to let all or part of their ground go fallow for one or multiple dry years.</p> <ul style="list-style-type: none"> - The effects of this S.E.D. will not be spread over our area evenly nor equitably. - According to the SED- On average there will be 290,000 less acre feet of surface water available. The assumption is that we will be able to pump enough water (or lay fallow acreage) to make up for this loss. - In the critically dry year the S.E.D. showed 614,000 acre feet less water available. These cutbacks will be primarily borne by ag and the employees directly and indirectly related to ag. - Averages can be useful, but the models on this particular topic need to be carefully reviewed, especially the dry and critically dry years. (Remember the SSJID/OID presentation) Please consider what the lean years mean to our struggling Central Valley economy. Average reductions don't show the full impact of this proposal. - Based on the studies it looks like all requests for water might be met in wet years. - The challenge is that if we get dry and critically dry years the loss for human benefit cannot be offset. A single year at higher pumping levels would be very challenging and 2-4 years back to back would be impossible. - With SED requirements for cold water storage it appears there will be less flexibility to store water for the dry years. As an example 50% of Don Pedro water will be required to be held back. - With this type of downside risk on water availability how can ag employers plan? The type of year, wet to critically dry, won't be known until well after crops need to be planted. How can we as a lender assess the risk of our investment with employers in this area? <p>Who will help these additional unemployed people? The local community at a 25% poverty level has little reserve. The primary one to bear the cost of these newly unemployed people will be the state of California in the unemployment benefits.</p> <p>In addition, as the farming acreage is reduced the increase in food costs will be borne by a growing group of unemployed citizens even less capable of buying the food.</p>	<p>Please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, regarding the scope of the economic analysis. Furthermore, please see Master Response 2.3, Presentation of Data and Results in SED and Responses to Comments, for discussion of why average results were presented. In addition, please see Master Response 8.1 and Master Response 8.2, Regional Agricultural Economic Effects, for presentation of the results of the revised SWAP model run averaged by water year type.</p> <p>During extended dry periods in the past, growers have offset surface water shortage by increasing groundwater pumping where groundwater is available. It is expected that the Sustainable Groundwater Management Act (SGMA) will help to ensure sustainable groundwater supplies for use during future droughts. Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, for discussion of SGMA and sustainably using groundwater to offset surface water shortage.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a discussion of reservoir carry storage targets and other requirements.</p> <p>Please see Master Response 3.2, Surface Water Analyses and Modeling, for discussion of reservoir operations.</p> <p>Please see Master Response 1.1, General Comments, for general information regarding the economic analysis.</p>
1192	8	<p>Groundwater quality will decrease for those in Merced and Stanislaus Counties. This is true for those in these 5 water districts. It is also true for those outside these districts. Water basins will be tapped that are not aligned with irrigation districts.</p> <p>The reduced supplies for cities, counties, and their citizens, in town and out of town may drive a want to "deepen existing wells or build more wells" as part of the answer. However, we will not even be able to support the groundwater pumping we have today.</p> <p>We have financed deepening and digging of wells. Neither of these things guarantee that one can get the quality or the quantity of water that the study implies. We have people who have spent \$250,000 digging a well and ended up with no water, poor water quality, or lost</p>	<p>Please see response to Comment 1192-1.</p>

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		<p>wells due to the effects of subsidence - which is literally the twisting of a well casing. This "deepening existing wells or building more wells" is not a solution.</p> <p>We have spent the past two years talking to our borrowers about the pending changes in groundwater management as a result of SGMA.</p> <p>It is very likely that we will be pumping less groundwater in Stanislaus and Merced Counties when SGMA is fully implemented. We are going to pump less groundwater even before the unimpaired flow proposal is considered.</p> <p>Groundwater pumping is not a solution in an average year and certainly not in a critically dry year.</p> <p>On one hand the SED implies there is groundwater to pump to offset surface water that is no longer available. The SED studies say that if you remove surface water it can be replaced with necessary pumping.</p> <p>However, we need to put that next to the science used for the S.G.M.A. implementation. The new groundwater law would not have been approved by the Governor if everyone thought that current pumping levels are at a sustainable level.</p> <p>If we say pumping is the answer in critically dry years to replace the removal of 614,000 acre feet of surface water, there has to be an assumption that our groundwater basins are currently sustainable.</p> <p>I ask you as a Board to please look at the science. It certainly appears that the S.E.D. and S.G.M.A. projections may not be in alignment. I have also heard suggestions that the implementations of S.G.M.A. should include an adjustment for global warming reducing our future rain and snow projections.</p> <p>We are looking at the same 2-3 counties in both the unimpaired flow discussion and the groundwater discussion. I would encourage the Board to ensure that future water predictions be consistent when we discuss both of these topics side by side.</p>	
1192	9	<p>The net result of less water for our region, as provided for in this proposal, will mean:</p> <ul style="list-style-type: none"> - Degraded groundwater quality. Groundwater quality in our area is already challenged. Removing 14% of the clean surface water will reduce the quantity and the quality of recharge. We have already seen examples of this in the Southern San Joaquin Valley towns. - More unemployed citizens as ag and related employers reduce or close down their businesses in Stanislaus and Merced Counties. There will be a higher cost to this state's taxpayers to support these newly unemployed people. - A reduction of income to our region due to decreased farmable acres and higher expenses. Our ag employers in this area will need to own more acres in the wet years to withstand the substantial decrease of surface water in dry and critically dry years. - In addition , please consider what the employers we finance have just faced. It includes: <ul style="list-style-type: none"> -- New overtime rules 	<p>Please see Master Response 1.1, General Comments, acknowledging the concerns of elected representatives and other community members, groundwater resources, surface water resources, and economic effects.</p>

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		<p>-- New minimum wage rules</p> <p>-- Pending, new air quality regulations</p> <p>-- Groundwater milestones that are rapidly approaching</p> <p>-- With this SED they face even a greater reduction in water.</p> <p>- Reducing the water supply will also hurt supporting industries. Jobs for farm labor, feed companies, nurseries that grow trees, and labor at dairy and processing facilities will also be reduced. We will be facing additional unemployment.</p>	
1192	10	<p>The reverberations on this water reduction will rumble through a struggling economy in our area.</p> <p>For the sake of the economy in Stanislaus and Merced Counties I would ask that you look for different solutions than the proposal that is in front of you. I would encourage you as a Board to collaborate with others in this local area as you attempt to increase the fish population. Consider the predatory issue that has been raised. Consider reaching out to the Irrigation Districts who know these rivers and dams. Consider other measures available to you.</p> <p>Please think about the area you are in today and the people that live here. Our local economy and society need a place on the scale as you make decisions that are fair and balanced.</p>	<p>Please see Master Response 1.1, General Comments, for information regarding voluntary agreements and collaboration with agencies, the public outreach process, and the consideration of beneficial uses. Please see Master Response 8.2, Regional Agricultural Economic Effects regarding potential economic impacts. Please refer to Master Response 3.1, Fish Protection for a discussion regarding the justification of the plan amendments to protect fish. Please See Master Response 5.2, Incorporation of Non-Flow Measures regarding the role of non-flow measures in the plan amendments.</p>
1193	1	<p>The Board of Farmland Working Group supports the people of Stanislaus County and surrounding counties in protesting the proposed Bay-Delta Plan by the State Water Resources Control Board.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1193	2	<p>The FWG Board supports the language California Assembly Member Adam Gray has outlined in his letter to the State Water Resources Control Board dated January 3, 2017.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1193	3	<p>The FWG Board believes the process, by virtue of the flawed and noninclusive staff reports, can be rectified with more inclusive fact-finding information and stakeholders taking part as decision makers.</p> <p>As former councilmember for the City of Newman, I was told water issues would continually play a prominent role in the Central Valley, and the political volley over water rights unending. It seems ironic that these current discussions are taking place when water seems so abundant; we know the core issue remains, water distribution.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please also see Master Response 1.2, Water Quality Control Planning Process, regarding the process and authorities under which the State Water Board is amending the Bay-Delta Plan.</p>

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1194	1	<p>I write concerning the flow objectives pertaining to the Tuolumne River. Water from the Tuolumne River makes up 85 percent of the San Francisco Public Utility Commission’s (SFPUC) Hetch Hetchy Regional Water System. SFPUC serves 2.6 million people across San Francisco, Silicon Valley, and the East Bay, an area that contains 3.3 million jobs, and generated \$667 billion in GDP in 2015. Were it its own hydrological region, the SFPUC service area would be the most water efficient in California. Paired with its economic strength, the SFPUC service area likely creates more economic benefit per gallon of Tuolumne River water than is produced by any other water system in the entire United States.</p> <p>SFPUC estimates the draft SED could lead to dry-year water supply shortages in the SFPUC service area of as much as 121,000 acre-feet. According to recent analysis completed by the Bay Area Council Economic Institute, meeting dry-year conditions under the SED would require system-wide R-GPCD rates to be reduced by as much as 55 percent to just 30 gallons. Some cities, such as Menlo Park, could ration residents to just 8.57 gallons per day. By comparison, residents in Melbourne Australia, often considered one of, if not the, most water efficient in the developed world, use 40 gallons per day. Residents in the SFPUC service area currently use 54 gallons per-capita per-day (R-GPCD) compared to the statewide average of 82 gallons.</p>	<p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers.</p>
1194	2	<p>While the Bay Area Council values and supports the Water Board’s intent to improve fisheries on the San Joaquin River and its tributaries, we are concerned that the SED could result in significant harm to Bay Area residents, and leaves too many critically important questions unanswered.</p>	<p>Please see Master Response 1.1, General Comments, acknowledging the concerns of elected representatives and community members and for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>
1194	3	<p>We fear the severity of dry-year shortfalls under the SED could result in a general moratorium on new construction in at least 14 Bay Area cities, many of which are California’s fastest-growing job centers. Research from the California Legislative Analyst’s office shows that shortages between supply and demand in the housing market is a major driver of elevated housing costs and poverty across California. Our analysis shows that had the SED been implemented in 1990, the Bay Area could today have 91,098 fewer housing units, with added pressures on renters, first-time homebuyers, and employers trying to fill workforce needs. These and other findings are detailed in the attached report [ATT 1].</p>	<p>Please see response to comment 1194-1 and Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System for economic considerations and growth effects. Please also see Master Response 6.1, Cumulative Analysis, regarding growth and housing. As identified in the SED, Table L.6-4, the 2010 baseline economic output of San Francisco County was approximately \$125 billion and the Bay Area Region as a whole was approximately \$645 billion. It is unreasonable to assume that a region with \$645 billion in economic output will refuse to implement water supply actions.</p>
1194	4	<p>We’re very troubled by the possibility that the SED would result in an unofficial reallocation of SFPUC water to other downstream users. The SED contains no guarantees that any new environmental water in the San Joaquin and its tributaries couldn’t be counted as new Delta inflow, and therefore used as a basis to increase diversions by the State Water Project and Central Valley Project.</p>	<p>Please See Master Response 1.1, General Comments, regarding exports to south of Delta users.</p>
1194	5	<p>It’s been obvious for some time that California lacks the water needed to meet its competing obligations, and that without some sort of grand bargain that pairs conservation and new environmental water with major new investments in storage, habitat, recycling, and conveyance, conflict will continue to define regulatory decisions about water in California. Until such compromises can be reached, it is our view that a negotiated settlement among water users, environmentalists, and State and Federal water regulators provides the best opportunity for achieving a sustainable outcome on the San Joaquin and its tributaries.</p>	<p>Please see Master Response 1.1, General Comments, for information regarding voluntary agreements.</p>
1194	6	<p>[ATT 1] In an average year, about 48 percent of the Tuolumne’s water is diverted for Central</p>	<p>Please see response to Comment 1194-1.</p>

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		<p>Valley agriculture, 38 percent remains in the river, and 14 percent is diverted by the SFPUC (Figure 1). Water from the Tuolumne River is the primary (85%) supply for SFPUC’s RWS that serves 2.6 million people in San Francisco, Silicon Valley, and the East Bay. During dry years, as little as 10 percent of the Tuolumne’s water remains in the river. According to this analysis, meeting the SED’s increased flow requirements in dry years would require major cuts to water supplies for the Bay Area, the Central Valley, or some combination of both.</p>	
1194	7	<p>[ATT 1] The draft SED does not explain how the cuts would be allocated across users; SFPUC estimates it could be responsible for providing as much as 51 percent of any new flows required. Under that scenario, SFPUC analyzed flow data on the Tuolumne River going back to 1920, and estimated how much water would be available for its Bay Area retail and wholesale customers in each year through 2010 according to five different variables: 20, 30, 40, and 50 percent unimpaired flow, as well as a “base case” without an unimpaired flow standard. SFPUC repeated the analyses under three different demand scenarios: A system wide demand of 265 million gallons per day (MGD) to represent future conditions; demand of 223 MGD to represent current system demand without rationing and equivalent to deliveries made in FY 2012-2013; and lastly, demand of 175 MGD to represent current system demand including drought rationing equivalent to deliveries made in FY 2015-2016.[Footnote 1: Deliveries by demand and unimpaired flow as provided by the SFPUC upon request.]</p> <p>The Bay Area Council Economic Institute looked at the impacts a 30, 40, and 50 percent unimpaired flow requirement on the Tuolumne River would have on Bay Area water users under the 175 MGD scenario. The 175 MGD scenario was chosen because it accurately reflects recent (2015-2016) dry year demand, and therefore represents the worst-case scenario current residents could be expected to face, and city planners would be forced to consider when evaluating available water supplies available for new development.</p> <p>The key takeaways from this analysis are as follows:</p> <p>The draft SED could lead to large water supply shortfalls during dry years. According to the SFPUC, Regional Water System (RWS) supplies would be reduced to as low as 67 MGD from 175 MGD during dry years such as 1990, 1991, 1992, resulting in a maximum annual shortfall of 120,976 acre-feet. The shortfall would have to be addressed either through conservation, the creation of new water supplies, or a combination of both.</p> <p>The draft SED could result in severe dry-year water rationing in the RWS service area. Using conservation only, RWS users could be forced to reduce water use 55 percent to 30 gallons per residential user per day (R-GPCD) during dry years (Table 1) [ATT 1: ATT 1]. Many cities would face R-GPCD requirements that were much lower, such as Menlo Park at just 8.57 gallons. RWS customers currently use 54 R-GPCD, the lowest in California. The California statewide average is 82 R-GPCD.</p>	<p>Please see Master Response 1.1, General Comments for a discussion of the programmatic scope of the SED. Please see Master Response 1.2, Water Quality Control Planning Process, regarding implementation of the LSJR flow objectives through separate water rights proceedings. The SED analysis does not specifically describe the allocations of water supply reductions between the three water users on the Tuolumne River, because this allocation would be determined based on water rights and the contracts and agreements that have been signed by the two water districts and the SFPUC. The State Water Board understands that various implementation measures may be required on each tributary to achieve the plan amendments.</p> <p>Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the potential hydrologic effects of plan amendments on SFPUC water supply.</p>
1194	8	<p>[ATT 1: ATT 1 - Figure 1 Tuolumne River Diversions, Average Water Year]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>
1194	9	<p>[ATT 1] The draft SED could result in building moratoria in affected cities.</p> <p>Residents in Melbourne Australia, widely regarded as one of, if not the, most water efficient cities in the developed world have achieved 40 R-GPCD. We assume that any Bay Area city which would be forced to plan around dry-year R-GPCD levels below 35 gallons would be</p>	<p>Please see responses to comments 1194-1 and 1194-3. As discussed in Master Response 8.4, Non-Agricultural Economic Considerations and Master Response 8.5, a wide variety of factors influence growth and urban development, or the specific locations of housing, businesses, and development within the plan area and within the Bay Area, one of which may be water supply. Please see Master Response 6.1, Cumulative Analysis, for a discussion of growth inducing effects and housing factors. Similarly, the types of</p>

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		<p>compelled to adopt interim controls over new permitting and implement a moratorium on new construction (Figures 2, 3, and 4) [ATT 3, 4 & 5].</p> <p>The draft SED could result in higher housing costs in the Bay Area.</p> <p>The California Legislative Analyst’s office has found that building less housing than people demand inflates housing prices.² Had the draft SED been put in place in 1990, the earliest available housing data provided by the California Department of Finance, we estimate the multiple building moratoria could have resulted in 91,098 fewer housing units over the period ending 2015. Over the same time period, the RWS service area attracted 302,435 new residents. Additionally, SFPUC estimates RWS demand will increase to 265 MGD in the future, meaning the gulf between the Bay Area’s supply and demand will grow over time, further negatively impacting affordability.</p> <p>The draft SED could undermine Bay Area economic growth.</p> <p>The region served by the RWS supports 3.3 million jobs and generated \$667 billion in GDP in 2015.³ Moratoria on new development will directly undermine the ability of Bay Area employers to grow and create jobs in the region. Indirectly, Bay Area employers increasingly cite the lack of housing as a powerful deterrent to locating new growth within the Bay Area, and report outsourcing new jobs to regions with more affordable housing supplies. By making it harder and more expensive to build, the SED will reinforce this trend.</p>	<p>jobs and economic activity associated with the Bay-Area would continue to attract people and the plan amendments would not have an effect on this attraction. As noted in Master Response 8.5, there was no discernible downturn in regional economic activity and housing permits throughout the region generally continued to increase during the recent 5 year drought period.</p>
1194	10	<p>[ATT 1] The draft SED could increase the price of water within the Regional Water System (RWS).</p> <p>Due to chronic water supply deficits throughout California, we assume SFPUC will be unable to secure long-term contracts for imported water, and would instead have to create new water either through desalination or water recycling. During dry years at 175 MGD demand, SFPUC estimates the RWS supply will be reduced to 67 MGD, a supply gap of approximately 121,000 acre-feet per year. Producing such quantities of water through desalination would cost an estimated \$258 million - \$286 million annually, a net cost increase of between approximately \$38 million and \$66 million to ratepayers. Water recycling wasn’t considered due to the lack of projects at comparable scale.</p>	<p>The State Water Board acknowledges and appreciates San Francisco’s water conservation efforts and ongoing commitment to demand management of its water supply. The State Water Board understands the San Francisco Public Utilities Commission’s (SFPUC) commitment to developing a comprehensive water supply portfolio to improve water supply reliability, diversify supply sources, and to prepare for drought, climate change, population growth, and regulatory changes. Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply to the SFPUC water system service area during consecutive drought years with implementation of the plan amendments. As described in Master Response 8.5, the State Water Board identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources, such as through water transfers. In addition, please see Master Response 8.5 for a discussion regarding potential effects on regional economic activity in the SFPUC water system service area. Further, while the 2016 Recirculated Draft SED’s analyses and conclusions differ from the SFPUC’s, the SED’s analysis are supported by substantial evidence.</p>
1194	11	<p>[ATT 2: Table 1. Unimpaired Flow Impacts on Bay Area Water Providers.]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>
1194	12	<p>[ATT 3: Figure 2. Potential Rationing with 30% Unimpaired Flow on the Tuolumne River Assuming RWS Demand of 175 Million Gallons per Day]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>
1194	13	<p>[ATT 4: Figure 3. Potential Rationing with 40% Unimpaired Flow on the Tuolumne River Assuming RWS Demand of 175 Million Gallons per Day]</p>	<p>The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.</p>

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1194	14	[ATT 5: Figure 4. Potential Rationing with 50% Unimpaired Flow on the Tuolumne River Assuming RWS Demand of 175 Million Gallons per Day]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1195	1	<p>To the State Water Quality Resource Board: Your study was done with the wishes of Governor Brown with only one real goal in mind. It is simply a water grab! There seems to be a concerted effort to disregard the successful local efforts to manage Tuolumne water over the last hundred years. This management of our rivers has created a useful, economically viable resource for food and employment for many thousands of folks who call this area home. To meddle with the multifaceted protocols that have given the upper Central valley of California an important change from the arid grasslands it once was would be a gross mistake. An important concern in any effort must first consider the holding capacity of the land. Over built Southern California has reached north in an ever increasing quest for our water- an essential consideration before growth is even started! The Central Valley Project has for many years taken advantage of northern water. All of California has paid for the costly efforts to help our southern neighbor. Edmond Brown set the stage for dams, canals and pumping stations that have siphoned water to the south and he set up the Resources board. Now Governor Jerry Brown has continued this dream and for his own legacy by taking on the high speed train project and the twin tubes under the Delta. The diversion of Tuolumne river water will destroy thousands of jobs, fallow thousands of acres of productive farmland and destroy communities that depend on that water.</p> <p>Stanislaus county alone is expected to grow to over 800,000 people in the next 45 years. Our water sources are stressed to keep up in draught years even now. To confiscate our water is to destroy this area and turn it back to the dry grasslands our pioneer families changed with their thoughtful hard work.</p> <p>The Tuolumne watershed is spoken for. From Hetch Hetchy to The Crystal Springs near Silicon Valley this watershed supports miles of canals, water to twenty six Bay area cities, lakes for drinking water , recreation, flood control, a vast farming operation and a wide array of supporting industries. How can the board even think of taking a portion of this to supply more water to an overpopulated area of overbuilt housing that has created a smog burdened pale over a once beautiful valley?</p> <p>This is not really about salmon, it is a ruse to capture more water!</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1195	2	The Tuolumne will continue to have salmon and, if not, it will be like the demise of salmon all up the coast even into Canada, our east coast and in western Europe. Dry land salmon factories are showing impressive progress and are being replicated across the country. This is a commercial grade effort that bypasses many of the current salmon problems.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1195	3	We are wasting huge amounts of money listening to folks similar to those who chained themselves to the rocks to prevent Malone's Dam being filled years ago. Then it was to save white water rafting. Today it's the salmon. Why not listen to those less vocal who strive every day to make our communities better. If the Control Board's studies really looked at our communities, the people who dreamed up the short sighted ideas would be ashamed to think about stealing our water. Also, for the State to take one hundred million from the 2014 7.5 billion water bond Proposition 1 passed overwhelmingly in the election and give it to the Coastal Conservatory to build a trail along the coast is a disgusting misuse of that fund and undermines the faith we should have with government. We can only hope that the water Board has listened to the people and will not replicate a similar error in moral judgment. Rather than taking our water build, on future southern needs, only with surplus	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		<p>water we will willingly share after our water banks are full and able to support our northern homes, industry and fisheries now and in the future.</p>	
1195	4	<p>[ATT 1: NPR.org article - Can Salmon Farming Be Sustainable? Maybe, If You Head Inland]</p>	<p>This attachment was included with the comment letter. The attachment does not make a general comment regarding the plan amendments or raise a significant environmental issue.</p>
1196	1	<p>I'm sure you are aware that California is the nation's leading producer [of] agricultural products. In 2012 California's farms and ranches accounted for \$42.6 billion in economic output, with milk production being California's largest agricultural industry. Across the dairy products sectors, milk, butter, cheese, evaporated products and frozen desserts, dairy processing directly accounted for \$3.37 billion in value added. California's grape production, the State's second largest account for \$3.65 billion in direct value added. Fruit and vegetable canning, pickling, and drying, and soft drink and ice manufacturing sectors were responsible [for] \$6.58 billion in direct value added sales.</p> <p>In terms of employment these sectors accounted for more than 222,000 jobs. These are statewide figures, but each and every one of these sectors is largely representative of the businesses operating directly in and around Modesto. The food and beverage processing industry in Stanislaus County employs approximately 25,000 people and adds a value of over \$2.3 billion to the local economy. Why this is important is the proposed State Water Resources Control Board action by implementing the 2016 Bay-Delta Plan Amendment and SED will have significant negative effect on the long-term viability of the local food and beverage industries. Many of the food processing industries in the Modesto area will experience the devastating economic consequences, as well as nearly every family living in Stanislaus County. If adopted as proposed, there will be a smaller crop production, increased water cost, and a reduced competitive market in the local, national, and world markets.</p>	<p>Please see Master Response 8.2, Regional Agricultural Economic Effects, for discussion of the potential economic effects on food processors.</p>
1196	2	<p>The 1995 Water Quality Control Plan designates beneficial uses and it does recognize Municipal & Industrial use as an important beneficial use. The SED will undervalue the municipal uses and fails to strike an appropriate balance among the competing uses of the water. That means urban water users will not be a priority when considered by SED against environmental uses. For decades, Modesto has aggressively been planning and building an environmentally, eco-friendly, conjunctive reliable water supply. The just-completed \$200 million "phase 2" Modesto surface water treatment plant combined with "phase 1" will ultimately produce approximately 60,000 AF of drinking water to supply water to Modesto, and perhaps other communities for the next 40 years.</p> <p>Additionally, when completed this fall/winter 2017, the \$100 million dollar recycled water project will produce ultimately 35,000 AF of water a year for agricultural use. All told, the surface, aquifer and recycled water programs are a model for integrated water management. What a significant accomplishment for a city in California, but now the expected rewards of smart environmental planning have turned, in part, to liabilities, especially to cities such as Modesto with a conjunctive water system. The mandated water reductions of the State Water Board in 2016 on municipal water users combined with severe flows restrictions expected in the SED on the lower San Joaquin Tributaries will have a crippling effect on Modesto's water system. The SED rules do not consider beneficial use or credit for recycled water.</p> <p>First consider the economic impacts already realized during state-mandated drought restrictions. Modesto completed significant reductions by the end of 2010. In 2016</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the consideration of beneficial uses by the State Water Board through the water quality control planning process. Please see Master Response 8.0, Economic Analyses Framework and Assessment Tools, for a description of how economics are considered in the Recirculated SED and the analytical framework and the tools used. The State Water Board considered a wide range of economic factors, including factors related to municipal uses, in the SED. For example, Section 20.3.3, Effects on Municipal and Industrial Water Supplies and Affected Regional Economies, discusses Phase 1 and 2 noted in the comment. Please see Master Response 8.4, Non-Agricultural Economic Considerations regarding water supply uncertainty on infrastructure planning related to municipal water supplies and ratepayer effects.</p>

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		<p>mandated drought restrictions, unfairly imposed to municipal systems, caused fixed operations rate increases to customers of 25%. Had volumes restriction not been imposed the inflationary increase would have been spread out to a modest 2-3% increase. With the SED unimpaired flows caused reductions and concurrent increased fixed costs, Modesto municipal water customers will be burdened with a larger fixed cost, and likely idle up to 50% the surface water treatment plant. None of this was considered remotely possible when planning Modesto's future water supply with its water supplier Modesto Irrigation District back 1995.</p>	
1196	3	<p>Shared Burden: Modesto has been environmentally conscious with water use and continues to improve on its system and conservation, as is evident by the current investment for the future. My question is, can the State make the same claim? California transfers water from the Delta. This includes water from the Stanislaus, Tuolumne, Merced, and San Joaquin rivers in the south, and the Sacramento, American, Feather, and many others rivers in the north. This allows the State Water Project to deliver 2.4 million AF of water each year from the Banks Pumping Plant.</p> <p>The Central Valley Project is a federal water management project. On average, the Central Valley Project delivers 5.6 million AF of water each year, and both the State Water Project and the Central Valley Project sell water for agricultural, wildlife, management, and municipal use. On average, California and the Federal Government serve easily the needs of more than 210 California cities through their municipal water systems (Table 1) [ATT1]. Included in Table 1 is information from the State Water Resources Control Board combined with information from the Water Education Foundation. Though this information is not complete in the sense of in-depth study, but an analysis indicates the information in the table is accurate. Because complete information is not available, the table indicates there is a large volume of water not being accounted for.</p> <p>The conclusion from this information is that 2,221,431 AF per year is the average annual possible water demand for the 221 cities receiving water from the rivers that flow through the Delta or the Delta itself. Coincidentally, nearly all cities in this table did not maintain a reduction in their water consumption using the State mandated self-certification stress test for conservation last year. Conversely, the SED proposes that some cities, including Modesto, not only will be required to maintain significant conservation by the stress test methodology, but additionally, along with all of those relying on water from tributaries of the San Joaquin, bear the brunt of the devastating consequences from the unimpaired flow restrictions.</p> <p>My point is that the State and Federal Government are pumping too much water from the Delta to begin with! If each of the 221 cities listed herein would reduce their urban water use by less than 14%, it would clearly meet the goals of about delivering 300,000 AF per year of unimpaired flows proposed by the SED. However, the SED wants to put the entire burden on those in the southern San Joaquin River tributaries. This clearly is not correcting the problem, which is that the state and federal government are taking too much water from the Delta. What's next, 60% of unimpaired flows or 70% of unimpaired flows? Shouldn't the issue be everyone needs to share in the sacrifice? Isn't this an issue that everyone needs to be part of the solution?</p>	<p>Exports and Delta outflow will be addressed in the Sacramento Bay-Delta watershed update. While reduction in water use in Southern California would be beneficial to the overall water availability in California, it does not address the goals of Phase I, which include improvement of flows within the Stanislaus, Tuolumne, and Merced Rivers, for aquatic resources.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the approach to the Bay-Delta Plan Updates. Please see Chapter 3, Alternatives Description, for a description of the plan amendments under consideration as part of Phase I.</p> <p>The water conservation strategies initiated during the 2014 – 2015 drought will help reduce the water supply impacts described in the SED. Please see Master Response 3.6, Service Providers, for more detail regarding municipal water conservation.</p>
1196	4	[ATT1: Table 1: California Cities' Municipal Water Systems]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

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1197	1	The City is a wholesale customer of SFPUC, purchasing approximately 85 percent of its potable water from the San Francisco Regional Water System. Under this proposal, this supply could be reduced more than 50 percent if drought conditions persist for multiple consecutive years.	Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfer.
1197	2	Based on Mountain View's 2015 Urban Water Management Plan, supply reductions in excess of 40 percent would require ceasing all landscape irrigation except as needed for fire prevention, erosion control, and environmental mitigation (irrigation of public parks, playing fields, day-care centers, and school grounds would be allowed to irrigate one day per week), eventually causing loss of landscaping and trees throughout the City . If the water-saving measures were not adequate to generate needed water use reductions, additional and more severe measures would likely be adopted by the City Council, potentially creating additional hardships and impacts to local and regional economic health.	Please see response to comment 1197-1. Given the State Water Board’s determination that the severe rationing anticipated by SFPUC is not reasonably foreseeable, it would be speculative to assume with any degree of certainty how potential increased severe water rationing and water use restrictions would affect park vegetation, urban forests (including tree loss), and other landscaping. Furthermore, reduced water supplies does not mean there will be a loss of landscaping. Many cities throughout California, in an effort to adapt to drought and use water in a sustainable way, are installing drought-tolerant landscaping in both public and private areas. Please also see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, for a discussion regarding economic considerations, growth effects, environmental effects based on a rationing-only approach, and demand management. Please also see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding growth and housing, as well as Master Response 6.1, Cumulative Analysis.
1197	3	Mountain View purchases surface water from the Santa Clara Valley Water District (SCVWD), whose imported and local supplies would also be subject to potentially significant reductions in a drought, reducing the City's ability to offset SFPUC water supply reductions.	Please see response to Comment 1197-1.
1197	4	Reductions in SFPUC supplies may force Mountain View to use more local groundwater. Since groundwater recharge is largely dependent on programs managed by the SCVWD, significantly increased groundwater pumping could have consequences such as groundwater overdraft, sea water intrusion, and land subsidence, which were not adequately analyzed in the SED.	Please see response to comment 1191-1. Please also see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System regarding groundwater use. Finally, please also see Master Response 1.1, General Comments, for a general discussion as to the approach to the analyses contained in the SED, and the programmatic nature of analysis, and Master Response 8.5, for a more specific discussion of programmatic analysis.
1197	5	<p>In the last several years, it was necessary for California water retailers to respond aggressively to reduced water supplies and ensure adequate resources were available for all needs. The following illustrates Mountain View's commitment to reduce water use during the recent drought and plan for future water supply challenges as part of our environmental sustainability efforts.</p> <ul style="list-style-type: none"> Mountain View's conservation programs and outreach helped reduce residential per capita water use from 83 gallons per capita per day (gpcd) in Fiscal Year 2005-06 to 57 gpcd in Fiscal Year 2015-16, a decrease of 31percent. Additionally, total water use in 2016 decreased 28 percent from 2013, and there have been similar reductions in many BAWSCA agencies. The success of the City's water conservation programs, as well as the savings generated by regional water suppliers, demonstrate a strong commitment to reduce water use and ensure adequate supplies for all water needs. Mountain View has made major investments to develop new supplies. In 2009, the City placed into service a distribution system which provides recycled water to parks, a golf 	The State Water Board acknowledges Mountain View’s water conservation effort and ongoing commitment to demand management. The commenter does not raise significant environmental issues or make a general comment regarding the plan amendments.

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		<p>course, and numerous businesses in the City's North Bayshore Area. We are continuing efforts to improve the quality of our recycled water and actively working on expansion of this system to increase recycled water use.</p> <ul style="list-style-type: none"> Mountain View is working with the SCVWD and local cities to analyze options for purifying the City's wastewater and using this supply for indirect and direct reuse projects. 	
1197	6	<p>Mountain View serves water to over 75,000 residents and over 3,000 commercial and industrial customers. Potential consequences of the SED proposal include health and safety concerns due to lack of potable supplies and delayed community development in Mountain View's service area, impacting the region's economic growth and ability to create needed housing.</p>	<p>Please see responses to comment 1197-1 and 1197-2. Please refer to Master Response 3.6, Service Providers, regarding Water Code section 106, minimum health and safety needs and a broad discussion regarding conservation. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for additional discussion regarding health and safety and the emergency provision.</p>
1197	7	<p>In light of these potential impacts as well as those articulated in the BAWSCA and SFPUC comment letters, the City of Mountain View requests that environmental and economic impacts of any shortage on the San Francisco Regional Water System be fully analyzed as part of the SWRCB's proposed flow alternatives. This analysis should be given at least equal weight with all other elements of the SWRCB's deliberations and decision making.</p>	<p>Please see responses to comments 1197-1 and 1197-2. To the extent that this comment letter raises similar issues or the same issues raised by SFPUC or BAWSCA, please refer to letter 1166 or letter 1191 to review responses to those letters.</p>
1197	8	<p>The City [of Mountain View] shares the SWRCB's concerns regarding the environmental health of the Delta and related water supply issues, and hopes to work collaboratively to develop a balanced solution. It is my understanding the Governor has also indicated his strong support for negotiated voluntary agreements to resolve these issues. Based on Mountain View's substantial investment in recycled water, our ongoing efforts to establish and expand the use of alternative water supplies, demonstrated success with water conservation efforts, and the Governor's support for negotiated agreements, the City of Mountain requests the SWRCB provide adequate time for a voluntary agreement to be reached amongst the stakeholders prior to final action on the SED.</p>	<p>Please see Master Response 1.1, General Comments, for information regarding voluntary agreements and collaboration with agencies.</p>
1198	1	<p>State clear ecological goals and outcomes. The SED needs to clearly state the specific ecological goals and expected outcomes for the Lower San Joaquin River and southern Delta. These goals and outcomes should also clearly state and identify priorities and milestones for achieving the identified goals and outcomes. The SED should more clearly acknowledge that proposed actions to achieve those goals and outcomes will have a range of impacts, some of which may involve tradeoffs between outcomes.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the LSJR narrative objective, salmon doubling goal, biological goals, and San Joaquin River Monitoring and Evaluation Program.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the consideration of reasonably protecting beneficial uses of water.</p> <p>Please see Master Response 3.1, Protection of Fish and Wildlife, for a discussion of the potential benefits of the salmon population, and refer to Volume 1, Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, for additional information regarding benefits to salmon populations.</p>
1198	2	<p>Utilize phased-approach for flow and non-flow measures. The SED focuses primarily on the use of unimpaired flow (UIF) as the tool to improve fish returns in the three San Joaquin River tributaries. We are concerned about the proposed use of this approach, for several reasons:</p> <p>The concept of using unimpaired flows as the primary basis for updating water quality objectives to attempt to increase the health of the Bay-Delta does not fully account for the</p>	<p>Please refer to SED Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, for responses to comments regarding the scientific basis for using unimpaired flow as the basis for flow objectives. Please refer to Master Response 1.1, General Comments, and Master Response 2.2., Adaptive Implementation for more information about voluntary agreements. Please see Master Response 1.2, for responses to comments regarding water rights proceedings.</p>

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		<p>current physical and regulatory realities on Central Valley river systems. In reality, water year type, long-term droughts, climate change, hydropower projects, diversions, flood control requirements, infrastructure limitations, invasive aquatic plants, and current channel capacities (among other factors) affect the timing and rate of flows on these rivers. The SED's use of an UIF metric does not adequately account for these realities.</p> <p>Further, in order to coordinate the operation of various projects and facilities on the tributaries, complex agreements and operating regimens have been put in place to maximize beneficial uses. Imposition of unimpaired flow criteria would, among other impacts, likely require amendments to such agreements/regimes to prevent injury to water rights and avoid impacting the performance of long-term investments in water rights and projects. While the SED includes some flexibility in the application of the use of UIF, more flexibility is needed to address specific river system conditions.</p>	
1198	3	<p>Utilize phased-approach for flow and non-flow measures. The SED focuses primarily on the use of unimpaired flow (UIF) as the tool to improve fish returns in the three San Joaquin River tributaries. We are concerned about the proposed use of this approach, for several reasons:</p> <p>The SED's primary focus on increasing flows discounts the role of non-flow measures, which are essential for protecting fishery ecosystems. On some streams, stakeholders have developed programs that have controlled flow regimes and developed non-flow measures that have successfully restored and protected fisheries and the ecosystem while still meeting municipal and agricultural beneficial uses. Water rights holders should get credit for the non-flow measures which have proven successful for fisheries. In addition, we believe that negotiated flow regimes specifically developed for the conditions on a given stream should be the preferred approach for the State Water Board in these proceedings.</p>	<p>The State Water Board recognizes the importance of implementing non-flow measures to aid in the recovery of, and to support, salmon populations. Please refer to Master Response 5.2, Incorporation of Non-Flow Measures regarding the role of non-flow measures in the plan amendments. Non-flow actions are recommended as part of a comprehensive effort to address Delta aquatic ecosystem needs, as set forth in Appendix K, Revised Water Quality Control Plan. The State Water Board also recognizes that non-flow measures, such as habitat restoration, must also be part of efforts to comprehensively address Delta aquatic ecosystem needs as a whole. The State Water Board encourages voluntary agreements that include non-flow measures and will consider such agreements as part of its proceedings to implement the plan amendments, consistent with its obligations under applicable law.</p> <p>For further discussion regarding non-flow measures and how they are incorporated in voluntary agreements, please see Master Response 5.2, Incorporation of Non-Flow Measures.</p>
1198	4	<p>Utilize phased-approach for flow and non-flow measures. The SED focuses primarily on the use of unimpaired flow (UIF) as the tool to improve fish returns in the three San Joaquin River tributaries. We are concerned about the proposed use of this approach, for several reasons:</p> <p>Requiring higher releases can have an adverse, if unintended, impact on beneficial uses during dry years when there is insufficient runoff to meet all water supply needs and emergency water conservation orders are in place to preserve water. Requiring higher releases in dry years will deplete water in storage reserved for subsequent years and result in other impacts to fish. A regime that relies primarily on UIF in a dry year or dry year sequence presents a significant risk of depleting cold water pools required for fishery health.</p> <p>An analysis of the impact of five critically dry years on water supplies for all beneficial uses should be required for each Alternative in the SED to adequately assess cumulative impacts due to climate change. The SED should also contain an analysis that includes the latest drought from 2012-2016. A five-year analysis is proposed in the long-term water conservation policy proposal ("Making Water Conservation a California Way of Life, Implementing Exec. Order B-37-16"), and a similar requirement should apply in analyzing the SED's alternatives</p>	<p>Please see Master Response 3.2, Surface Water Analyses and Modeling, for discussions on the determination of reservoir parameters, temperature criteria, carryover storage, and water supply reliability. Please see Master Response 2.3, Presentation of Data and Results in the SED and Response to Comments, for information regarding the cumulative distributions presented in the impact analysis and the use of cumulative distributions to identify dry years. Chapter 21, Drought Evaluation, describes the frequency and severity of dry years, using the annual percent of average runoff as a metric for identifying (and normalizing) the sequence of runoff during the 1922-2003 analysis period and the more recent 2004-2015 period. Each tributary was analyzed individually, because the effects of dry years on water supply were different for each tributary. The WSE model captures several 3-year, 4-year, 5-year, and 6-year droughts in the 1922-2003 analysis period. The WSE model results presented in Chapter 5, Surface Hydrology and Water Quality, and also in Appendix F.1, Hydrologic and Water Quality Modeling, indicate that implementing the LSJR alternatives would result in more years with reduced water availability and reduced water supply diversions, and recognize the largest water supply effects would occur during a multi-year sequence of low runoff years.</p> <p>Please see Master Response 3.1, Fish Protection, regarding the benefits to native fish populations from increased flows from February 1 through June 30. Please see Master Response 2.1, Amendments the Water Quality Control Plan, regarding adaptive implementation and non-flow measures.</p>
1198	5	<p>Support the development of voluntary settlements. The California Natural Resources Agency, with the State Water Board's encouragement, has been actively calling for</p>	<p>Please see Master Response 1.1, General Comments, for information regarding voluntary agreements. Please also see Master Response 2.2, Adaptive Implementation, for information regarding the STM Working</p>

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		<p>"voluntary agreements" to improve ecological conditions in the Delta and upstream watersheds. As discussed, within the Sacramento and Central Delta basin there are a number of river systems that have successful multi-stakeholder voluntary agreements in place. In addition to flow measures, these agreements have implemented various significant non-flow measures that are specific to each agreement. Examples of non-flow measures include in-stream habitat enhancement, riparian restoration, predator control, screening diversions, effectiveness monitoring, and adaptive management strategies, all to meet system specific program goals and objectives. The most successful component of these agreements has been the engagement of stakeholders, including agencies, NGOs, and local landowners.</p> <p>Rather than simply stating that volunteer agreements are encouraged, as part of the Phase I SED the State Water Board should develop a model framework of a successful agreement using actual examples from other Central Valley systems. These types of agreements will take substantial time and effort to complete. If progress on these agreements is occurring, then the State Water Board's schedule for the WQCP update should provide reasonable time for them to conclude.</p>	<p>Group and the incorporation of non-flow measures through the plan amendments and use of adaptive implementation.</p>
1198	6	<p>Consider and integrate SGMA. The Phase 1 SED acknowledges that imposition of the unimpaired flow recommendations on agencies with water rights on the three San Joaquin River tributaries would reduce surface water supplies relied on and invested in by local water agencies. The SED acknowledges that all of the Alternatives would impact groundwater, and Alternatives 3 and 4 "would have significant and unavoidable impacts on groundwater (supply and quality)..." (pg. 22-12.) The SED goes on to state that the reduction in surface water supply would be offset by increased groundwater pumping. The whole point of SGMA is to prevent over-drafting of groundwater basins, recharge over drafted basins, and begin sustainable groundwater management of basins in overdraft condition.</p> <p>In order to achieve its mandate, SGMA is likely to restrict yield from groundwater in many Central Valley groundwater basins. Thus, for the State Water Board to claim that water agencies will not be adversely impacted by the SED because they will offset their water supply deficiencies by pumping more groundwater, while SGMA is likely to restrict groundwater use in the next few years, creates another problem, not a solution. We would therefore request that the State Water Board revise the Phase 1 SED to fully consider and integrate SGMA into its environmental analysis, including the amount of water needed for groundwater recharge and banking, and to likewise consider SGMA in the upcoming Phase 2 SED.</p>	<p>The need to address the negative consequences from long-term overdraft is why the legislature passed SGMA in 2014. However, the State Water Board also has a legal mandate to reasonably protect fish and wildlife beneficial uses, which it is proposing to do with the plan amendments. The State Water Board acknowledges that it will be challenging, but SGMA compliance cannot occur at the expense of reasonably protecting surface water beneficial uses.</p> <p>SGMA requires local groundwater sustainability agencies (GSAs) develop and implement groundwater sustainability plans (GSPs) to sustainably manage local groundwater resources within 20 years. Variables, such as the amount of water needed for groundwater recharge and banking will be considered by GSAs as they develop GSPs. Since no GSPs were developed before the release of the Recirculated SED, it is unknown what actions the GSAs will take to achieve the sustainability goal. Therefore, any impact assessment would be speculative. However, SGMA was properly considered in the analyses, both as an existing legal requirement to prevent further degradation of groundwater basins and as a potential cumulative limit on future irrigation supplies.</p> <p>The plan amendments do not limit the ability of local entities to comply with SGMA; comprehensively addressing both surface water and groundwater resources allows for true integrated planning of scarce water resources that does not trade impacts between surface and groundwater. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA. For further discussion on these issues, please see Master Response 3.4, Groundwater Resources and the Sustainable Groundwater.</p>
1198	7	<p>Assess cumulative impacts from the existing export operations and the California WaterFix. The existing export pumping operations can affect salmon and steelhead on the Mokelumne River. These operations combined with the California WaterFix, if approved, could at times reduce Sacramento River system fresh water flows into the Delta and potentially further impact that important ecosystem. As a result, the cumulative effects of the WaterFix Project must be considered in each SED Alternative to ensure an adequate CEQA document.</p> <p>We appreciate the opportunity to comment on the SED and to work collaboratively with the State Water Board to develop a comprehensive, science-based and feasible proposal for updating the Bay-Delta Water Quality Control Plan that will enhance and protect natural</p>	<p>Please see Master Response 1.1, General Comments regarding California WaterFix. Please refer to Master Response 3.3. Southern Delta Water Quality regarding the protection of Southern Delta water quality. Also, please refer to Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources for discussion regarding California WaterFix with respect to cumulative effects.</p>

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		resources while balancing other beneficial uses of water.	
1199	1	<p>DWR and USBR have modelled exporting the increased South Delta flows. For the increased San Joaquin River flows to make a difference for migrating salmonids, the flows need to make it past the SWP and CVP pumps in the South Delta. The chart below [ATT1] is from preliminary modeling done for the Bay-Delta Conservation Plan parties and presented to the Bay-Delta Conservation Plan Steering Committee in 2010. The San Joaquin River sensitivity analyses was never published externally by DWR or USBR, so the only information available is from the 2010 presentation to the BDCP Steering Committee. [Footnote 1: Evaluations of BDCP Operations Sensitivity to a Range of San Joaquin River Flows, presentation to BDCP Steering Committee, August 12, 2010. Obtained from BDCP Steering Committee archives at http://baydeltaconservationplan.com.]</p> <p>Since fish are diverted roughly in proportion to flows, the increased exports by the South Delta pumps would mean that migrating fish would only derive 60%-80% of the benefit from the increased flows. The Board currently has definition of "Balanced Conditions" that are used when DWR and USBR are releasing water upstream for water quality purposes. There needs to be a similar definition of "Vernalis Balanced Conditions" when San Joaquin water rights holders are reducing diversions for water quality compliance at Vernalis and in the South Delta. The State Water Project and Central Valley Project will need to reduce diversions under such conditions so that stored water from the San Joaquin and Sacramento River diversions through the Delta Cross Channel are the primary sources of water. Under "Vernalis Balanced Conditions," diversions should be limited to stored water released from New Melones when the Delta Cross Channel is closed.</p> <p>This would have significant impacts on South Delta exports by the SWP and CVP; however, in implementing the water quality plan, the Board needs to consider the priority of water rights on the San Joaquin River.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1199	2	[ATT1: Graph showing a summary of Delta flow changes under SJR inflow scenarios.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1199	3	<p>CALSIM II needs a peer review for the proposed application.</p> <p>Validation of a computer model has been defined as "the process of determining the degree to which a model and its associated data are an accurate representation of the real world from the perspective of the intended uses of the model." [Footnote 2: Department of Defense, Instruction 5000.61 on DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A). Based on standard practice.] For uses in regulatory proceedings of the State Water Resources Control Board, Health and Safety Code Section 57004 provides for validation of models by peer review.</p> <p>According [to] a 2011 resolution of the State Water Resources Control Board [Footnote 3: State Water Resources Control Board, Resolution No. 2011-0062, Authorizing the Executive Director or Designee, on Behalf of Cal/EPA and all other Agency Departments, Boards and Offices, to Enter into a Contract with the Regents of UC Berkeley for Mandated Scientific Peer Review and other Expert Review and Curriculum Review Services.]:</p> <p>"State law (Health and Safety Code Section 57004, 115365, et al.) sets minimum requirements for external scientific peer review. Notably, Health and Safety Code Section 57004 requires all Cal/EPA boards, departments, or offices to submit for external scientific</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>peer review the 'scientific basis' and 'scientific portions' of proposed rules, consistent with the statutory definition of these two terms. For rules subject to this requirement, the scientific findings, conclusions, and assumptions on which the scientific portions of the proposed rule are based and the supporting scientific data, studies, and other appropriate materials, must be submitted for peer review. The law further specifies that the agency, or a board, department, or office within the agency, must enter into an agreement with the National Academy of Sciences, the University of California, the California State University, or any similar scientific institution of higher learning to conduct external scientific peer review of the scientific basis for any rule proposed."</p> <p>The full CALSIM II model has never had a technical peer review. There was a Strategic Review of CALSIM II in 2003, sponsored by the Bay-Delta Authority Science Program. The report, entitled, "A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California," was published in December 2003. [Footnote 4: Close et. al., "A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California," obtained from the Davis-Woodland Hearing: http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/daviswoodland/daviswoodland_cspa_es9.pdf.]</p> <p>In the report, the 2003 Peer Review panel noted that the information provided for review "precluded a thorough technical analysis," and stated that such a technical review should be carried out: "The information we received and the shortness of our meetings with modeling staff precluded a thorough technical analysis of CALSIM II. We believe such a technical review should be carried out. Only then will users of CALSIM II have some assurance as to the appropriateness of its assumptions and to the quality (accuracy) of its results. By necessity our review is more strategic. It offers some suggestions for establishing a more complete technical peer review, for managing the CALSIM II applications and for ensuring greater quality control over the model and its input data, and for increasing the quality of the model, the precision of its results, and their documentation." (p. 3)</p> <p>The 2003 review panel also recommended: "To increase the public's confidence in the many components and features of CALSIM II, we suggest that these components of CALSIM be subjected to careful technical peer review by appropriate experts and stakeholders." (p. 2) However, except for the San Joaquin River component of the model, a "careful technical peer review" appears never to have been done, and there have been continuing questions about the reliability of the model, particularly by stakeholders.</p> <p>The January 2006 review of the San Joaquin River module, titled, "Review Panel Report San Joaquin River Valley CalSim II Model Review." [Footnote 5: David Ford et. al., "Review Panel Report San Joaquin River Valley CalSim II Model Review," obtained from http://science.calwater.ca.gov/pdf/calsim/calsim_II_final_report_011206.pdf.] The 2006 Peer Review of the San Joaquin River component of the model noted some significant issues, and stated,</p> <p>"The panel does not in any way certify or endorse the model presented. On the other hand, we do not disapprove of or discourage its use by knowledgeable users. [. . .]</p> <p>"Users must take responsibility for model selection and application, and they must accept the responsibility for decisions that they make with information produced by the model. Relying on an external body to provide a blanket endorsement covering all possible</p>	

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		<p>applications is a dangerous practice. It tempts users to avoid accountability for their work. It tempts decision-makers to place responsibility on general model reviews which are remote from a particular application. Further, it opens the door to intentional and unintentional abuse, negligence or complacency by model users and developers, or their managers who may shift responsibility to tools or some external general review panel for decisions made or actions recommended based on their use of a model." (p. 8.)</p> <p>The 2006 Peer Review of the San Joaquin River component of the model also recommended documentation of model assumptions and error analyses. Under "Uncertainty in Model Results," the reviewers noted: "Currently no general guidance is available to indicate whether differences of 1 taf, 50 taf, 100 taf, or 500 taf are significant enough to rise above the level of error and noise inherent in the model." [p. 13], and recommended, "At a minimum, error analyses should be conducted, combining a sensitivity analysis of critical model results to some of the largest and least well supported model assumptions with an assessment of the likely range of error in these major model parameters and assumptions." [p. 13.]</p> <p>There has been no peer review of the error analyses conducted by the Department of Water Resources and the U.S. Bureau of Reclamation in the 2006 response. Such a review is essential to validate the model for its proposed use in the SED.</p>	
1199	4	[ATT2: Presentation titled "Evaluation of BDCP Operations Sensitivity to a Range of San Joaquin River Flows." BDCP Steering Committee. August 12, 2010.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1199	5	[ATT3: Department of Defense instruction on DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A). May 2003.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.