

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
1171	1	<p>The [California] Department [of Fish and Wildlife] agrees with the SED that the San Francisco Bay/San-Joaquin River Estuary (Bay-Delta) is in ecological crisis, with many native fish species populations at all time low abundances. In recent years, the poor water quality conditions in the Bay-Delta and Sacramento and San Joaquin river watersheds, exacerbated by drought, have brought fish species listed under the protection of the state or federal Endangered Species Act to levels near extinction or extirpation.</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>
1171	2	<p>The Department [CDFW] would like to reiterate its support for the State Water Board's use of water quality objectives to reasonably protect all beneficial uses of water, including establishing and maintaining viable salmonid populations. An objective can be numeric or narrative, and there are several different possible metrics to preserve the shape and variability of the natural hydrograph in river systems. The Department is interested in flows to provide specific and measurable benefits to fish populations, and the Department recognizes that the best approach to achieving those benefits may differ depending on whether the State Water Board is approving individually negotiated voluntary agreements tailored to specific tributaries or establishing a broader regulatory program of general applicability.</p> <p>In the absence of negotiated voluntary agreements with functional flow regimes tailored for that river's needs, the broader regulatory program proposed by the State Water Board, which relies on the percent of unimpaired flow from each San Joaquin River tributary and allows for shaping those flows through the adaptive management process to achieve functional benefits, is appropriate. The use of this UIF methodology can allow for instream flow protections through preserving the shape and variability of the natural hydrograph (Poff et al. 1997; Bunn and Arthington 2002) to support natural ecosystem processes. Providing conditions that mimic the natural hydrograph provides a "functional flows" approach that can be supportive of all native populations without attempting to control the specific mechanisms (e.g., physiological, chemical, fluvial, or biogeochemical) that are governing population size. In addition, the aquatic habitat that a natural hydrograph produces can constrain the proliferation of non-native species which reduce the survival and productivity of native species.</p> <p>The State Water Board's 2010 Report, "Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem", concluded that 60% of unimpaired San Joaquin River (SJR) inflow from February through June, as a criteria indicating general timing and magnitude, was needed to protect and ensure viable Lower San Joaquin River (LSJR) native fish populations and the ecosystem functions and services upon which they rely. In addition to the February through June period, minimum year-round flows are necessary to fully protect all aquatic life beneficial uses. The Department agrees that flow shifting, as described in proposed Alternatives 3 and 4 of the Bay-Delta Plan amendment may benefit native fish populations within and outside of the February through June period. However, to effectively manage this flow shifting and to maximize benefits, it is imperative that the Bay-Delta Plan include the framework for a rigorous adaptive management program.</p>	<p>Please refer to Master Response 3.1, Fish Protection, regarding the limited considerations of the Delta Flow Criteria Report, expected benefits from implementation of the plan amendments, consideration of year-round flow, and adaptive implementation including flow shifting. Please also refer to Master Response 2.2, Adaptive Implementation, for additional detail on adaptive implementation of the Plan amendments. See Master Response 1.2, Water Quality Control Planning Process, regarding the State Water Board's authorities and regulations governing the water quality control planning process.</p>
1171	3	<p>The [California] Department [of Fish &amp; Wildlife] believes that voluntary agreements provide a promising approach to achieving the water quality objectives in a timely, effective, and durable manner, and the Department is in the process of negotiating voluntary agreements directly with public water agencies and other stakeholders in the three San Joaquin River tributaries (Stanislaus, Tuolumne, and Merced Rivers). In the context of voluntary agreements negotiated directly with specific districts, the Department believes the best</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments by the State Water Board supporting voluntary agreements, including a discussion of flow and non-flow measures. Please see Chapter 3, Alternatives Description, for information on non-flow measures and Chapter 16, Evaluation of Other Indirect and Additional Actions, for evaluation of the non-flow measures. The State Water Board thanks the CDFW for</p>

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		<p>approach is to structure tributary-specific functional flow regimes, in coordination with appropriate non-flow measures, which address the underlying stressors and make substantial contributions toward achieving the State Water Board's water quality objectives. The Department recommends that the State Water Board consider any such voluntary agreements in light of the functional benefits they confer in a tributary along with the contribution they make to achieve the overall water quality objectives.</p>	<p>their support of the voluntary agreements.</p>
1171	4	<p>The Department (CDFW) believes that both flow and non-flow actions are necessary in the LSJR and tributaries to recover native species. Non-flow actions (e.g., habitat restoration) must be coordinated with flow actions in order to ensure the intended benefits to the aquatic ecosystem can be realized. For example, Figure 1 [see ATT1: ATT3] displays natural salmon escapement in the Stanislaus and Tuolumne rivers from 1995 to 2015. Both rivers have had extensive habitat restoration projects conducted over the last few decades. Escapement on the Stanislaus River has shown a steady increase since the instream flow requirements were implemented as identified in the 2009 BiOP (NMFS 2009). During the same period, the Tuolumne River has had no revised flow regime required or implemented, nor has the river exhibited escapement increases from the non-flow habitat restoration actions. The data suggest that non-flow actions alone will not provide the necessary habitat benefits to recover anadromous salmonid populations.</p>	<p>As discussed in Master Response 3.1, Fish Protection, the State Water Board recognizes that non-flow actions must be part of the overall effort to comprehensively address ecosystem needs in the Delta and tributaries, as a whole, and that results from the implementation of such actions can be used to inform adaptive implementation decisions in response to implementation of the plan amendments (see Master Response 5.2, Incorporation of Non-Flow Measures, for more information). For this reason, the State Water Board recommends and incorporates a range of non-flow actions complementary to the LSJR flow objectives for the reasonable protection of fish and wildlife in Appendix K, Revised Water Quality Control Plan.</p>
1171	5	<p>The Department (CDFW) believes that the inclusion of June in the Bay-Delta Plan flow objectives is needed to support the full expression of life history diversity of anadromous salmonids. Chinook salmon juveniles are present and migrate in the LSJR tributaries and Delta in June, and in some years, June emigration comprises a substantial proportion of the total number of emigrants for the year (e.g., 1998, 2006, and 2011) (Table 1 [see ATT1: ATT1]). From 1994 to 2016, Chinook salmon juveniles emigrated out of the LSJR watershed in 17 out of 22 years with the current impaired flow management regime. The currently proposed February through June "block of water" strategy provides the flexibility to adaptively manage flow regimes in real-time to optimize the use of water for aquatic ecosystem benefits, depending on current hydrodynamic and meteorologic conditions, fish presence, current ocean age class, structure/abundance, population abundance trends, water quality conditions, etc.</p> <p>The managed hydrology of the LSJR must be able to support all the freshwater life stages of anadromous species. This includes the connectivity of flow between the tributary watersheds and the Bay-Delta ecosystem to facilitate Delta migration and juvenile rearing. Flow from each of the tributaries must be able to continue through the Delta to facilitate olfactory cues to minimize straying from the LSJR and between its tributaries. This phase of the Water Quality Control Plan update develops new requirements for the flow from the LSJR to the Delta. It is critical that the new and revised flow requirements developed for Phase 2 of the Bay-Delta Plan update protect this flow through the Delta to protect the anadromous migratory corridor.</p>	<p>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. Please see Master Response 3.1, Fish Protection, regarding the inclusion of the month of June in the plan amendments.</p>
1171	6	<p>Adaptive Management and Monitoring --The SED and proposed Implementation plan have benefited greatly from the expanded description of the adaptive management process and the overall flexibility of shifting flow outside of the February through June time period. The proposed Stanislaus, Tuolumne, and Merced Working Group (STM Working Group) outlines a process by which the San Joaquin River and tributaries' flow and restoration activities can be adaptively managed. However, the SED and proposed amendments lack clarity in the governance structure and decision-making process for the adaptive management</p>	<p>Please see Master Response 2.2, Adaptive Implementation, for responses to comments regarding STM Working Group structure and governance, and examples of how adaptive implementation can occur.</p> <p>SED Appendix K explains that responsible parties and the extent to which each is accountable for achieving the goals and objectives, will be determined when the plan amendments are implemented: By 2022, the State Water Board will fully implement the February through June LSJR flow objectives through water right actions or water quality actions, such as Federal Energy Regulatory Commission (FERC) hydropower licensing</p>

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		<p>framework needed to support decisions on flows necessary to achieve viable native fish populations. The efficacy of the adaptive management process to protect all aquatic beneficial uses relies heavily on the ability of the STM Working Group to operate transparently, collaboratively, and efficiently. The Department recommends that the State Water Board consider alternative governance structures that will maximize flexibility, efficiency, and effectiveness in making decisions about adaptive management and, as part of such a structure, the Department recommends that State Water Board staff be assigned an active and clear leadership role in the STM Working Group that will allow them to facilitate forward progress and ensure compliance with the proposed water quality objectives, biological goals, etc.</p> <p>The Department [CDFW] strongly supports the use of SMART (specific, measurable, achievable, relevant, and time-bound) objectives as key components for adaptive management decisions. Clear goals and objectives are necessary to measure the success or failure of implemented actions (both flow and non-flow) to improve aquatic ecosystem conditions and anticipated anadromous fish population responses. When implementing established goals and objectives, it is important to identify the responsible parties and the extent to which each is accountable for achieving the goals and objectives. While the Program of Implementation requires the development of biological goals, the SED generally is unclear on how these biological goals, and any associated objectives, will be used to adjust the percent of UJF within the specified range (e.g., 30 to 50%). The Department recommends that the Program of Implementation specifically identify how and when the percent of UIF can be adjusted within the specified range using biological goals or objectives as the determinate trigger to adjust the percent of UIF.</p> <p>A robust monitoring and assessment program is also fundamental for an effective adaptive management program. The Department recommends that water right permits and water quality certifications require that the appropriate data be collected and be readily available to the STM Working Group for use in the adaptive management process. The necessary types of information likely include, but are not limited to, both current and forecasted water operations and reservoir conditions (e.g., water deliveries, current and projected reservoir levels, flows, water temperatures, cold water pool volume, and water transfers), diversion rates and volumes, and biological metrics for anadromous fish species (e.g., juvenile abundance, survival estimates, ocean age class abundance, and escapement). A collaborative and transparent assessment of environmental and biological conditions in the LSJR watershed will greatly improve the efficiency of the STM Working Group for real-time and long-term management of the system.</p>	<p>processes.</p>
1171	7	<p>SalSim -- The Department [CDFW] appreciates the efforts of the State Water Board staff to include SalSim estimates in their analyses to evaluate the effect of flow prescriptions on salmonid populations. The simulations performed by State Water Board staff resulted in fish population estimates lower than would have been expected based on empirical data. Through investigating the State Water Board's SalSim modeling results and the mathematical functions in the model, the Department determined that model parameter values in equations for egg incubation, alevin, and juvenile survival were in error. In combination, these errors produced excessively high egg and alevin mortality during warmer water flow events and juvenile survival that was not sensitive to river temperatures once flows exceeded approximately 450 cubic feet per second. In response, the Department revised the SalSim model, thus correcting the parameter values for these equations so that temperature responses for all life stages were more logical and better aligned with</p>	<p>Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, provides a use advisory for SalSim and specifically describes the limitations of SalSim</p> <p>Please see Master Response 3.1, Fish Protection, for further discussion on State Water Board's use of SalSim and acknowledgement of model limitations.</p>

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		<p>temperature guidelines. Please see the attached SalSim memorandum for further details in your continued efforts to update the Bay-Delta Plan.</p>	
1171	8	<p>Impaired Waters -- Increasing flow in the LSJR tributaries could preclude the need to develop Total Maximum Daily Load or other discharge control programs to eliminate currently identified or future water quality impairments in the LSJR and tributaries and the Delta. Streamflow is often considered a "master variable" because it is strongly associated with many critical physicochemical characteristics (e.g., temperature, salinity, residence time, and habitat diversity) of rivers (Poff et al. 1997). The release of high quality reservoir water into the tributaries of the LSJR can also alleviate other identified impairments in these watersheds. The benefits to water quality in the LSR watershed would be analogous to those realized by the conditions imposed on the United States Bureau of Reclamation by the Revised Water Right Decision 1641 to comply with the salinity standards.</p> <p>The salinity conditions in the SJR, Stanislaus River to Delta Boundary, have been effectively controlled by flow releases from New Melones Reservoir, and as a result, this river reach has been approved by the Central Valley Regional Water Quality Control Board to be removed from the impaired waters list (Resolution No. RS-2016-0083) for elevated electrical conductivity.</p> <p>Increasing the percent of UIF in rivers not only increases and improves habitat for fish and wildlife, but it also improves conditions for other beneficial uses (e.g., drinking water supply and agricultural supply). Increasing instream flow in the LSJR and Delta may remove impairments in these water bodies caused by salinity, elevated temperatures, and low dissolved oxygen (Table 2 [See ATT1: ATT2]), thereby removing the efforts and costs to develop control programs and basin plan amendments, to implement mitigation actions to comply with new water quality objectives for these constituents, etc. In addition, increasing the volume of water in rivers will increase their assimilative capacity for other constituents (e.g., pesticides, metals, sediment, and selenium), thus decreasing their adverse impacts.</p>	<p>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.</p>
1171	9	<p>Voluntary Agreements -- The Department [CDFW] believes voluntary agreements have the potential to provide the most efficient and effective means of achieving the water quality objectives and the Department appreciates the State Water Board's recognition of the efforts of the Department and stakeholders to secure collaborative voluntary agreements for restoration and water management. The use of voluntary agreements will likely expedite environmental improvements and the implementation of the proposed objectives by combining both flow and non-flow actions within the watersheds and obtaining the resulting benefits far more quickly than a full regulatory process would. The Department will continue to collaborate with stakeholders to develop solutions to protect all beneficial uses of water within the framework identified in the SED and proposed amendments and looks forward to submitting voluntary agreements to the State Water Board for approval.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, regarding voluntary agreements, including a discussion of flow and non-flow measures. Please see Chapter 3, Alternatives Description, for information on non-flow measures and Chapter 16, Evaluation of Other Indirect and Additional Actions, for evaluation of the non-flow measures.</p>
1171	10	<p>ATT1: Attachment 1: Tables and Figures</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>
1171	11	<p>ATT1: ATT1: Table 1: IEP Delta Juvenile Fish Monitoring Program Mossdale Trawl Raw Catch Data for Chinook Salmon.</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>
1171	12	<p>ATT1: ATT2: Table 2: Current and Proposed Impaired Water Bodies in the LSJR and Delta Due to Parameters Highly Influenced by Flow.</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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1171	13	ATT1: ATT3: Figure 1: Adult Escapement of Natural Chinook Salmon on the Stanislaus and Tuolumne Rivers from 1995 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.
1171	14	ATT2: Attachment 2: Literature Cited	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.
1171	15	<p>[From ATT3:]</p> <p>SED Chapter: Exec Summary</p> <p>Page #: ES-8</p> <p>SED Text, Paragraph, Sentence in Question: "Following are critical reasons why revised flow objectives are needed to reasonably protect fish and wildlife in the three eastside, salmon-bearing tributaries and the LSJR."</p> <p>Comment: Commercial and Sport Fishing (COMM) is a designated beneficial use that requires protection. The Delta once supported a robust commercial and sport fishing industry. Reductions in fish populations have greatly impaired COMM beneficial uses, which includes the decimation of a once thriving commercial fishery. The reduction in ecological health, as a result of flow alterations, impacts recreational fishery and local economies that rely on it. As well, the reduction in healthy fish in the watersheds makes it more difficult for subsistence fishers to provide the proper nutrition to their families. The Delta MeHg TMDL contains an analysis of subsistence fishers in the Delta region (Wood et al. 2010). In addition, State Board Resolution No. 2016-0011 confirms the past, present, and future uses of inland surface waters and enclosed bays for cultural and subsistence fishing by directing Water Board staff to develop for adoption specific beneficial uses to protect these uses.</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the consideration of beneficial uses and the State Water Board's authorities to reasonably protect fish and wildlife. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the description of the plan amendments and suggested modifications to the plan amendments by commenters. As identified in Chapter 7, Aquatic Resources, and Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, the LSJR alternatives would improve the flow conditions in the Delta, thereby benefiting the beneficial use of fish and wildlife. Furthermore, Chapter 20, Economic Analyses, does acknowledge the economic effects experienced by the commercial fishing industry and identifies the LSJR alternatives would result in a positive economic effect (Section 20.3.5, Effects on Fisheries and Associated Regional Economies).</p>
1171	16	<p>[From ATT3:]</p> <p>SED Chapter: Exec Summary</p> <p>Page #: ES-13</p> <p>SED Text, Paragraph, Sentence in Question: "For example, if the flow requirement is 40 percent of unimpaired flow from February through June, the remaining 60 percent is available for all other uses. In practice, even more than 60 percent is available for other uses because some of the water used is returned to the river, and would contribute to the 40 percent unimpaired flow requirement. Unimpaired flow is therefore a more transparent way to allocate water towards the protection of fish and wildlife resources and other uses of water."</p> <p>Comment: A volume of water (e.g., 40% UIF) released from the reservoir is not equivalent to the same volume of water contributed partially from agriculture return, urban run-off, and wastewater discharges. Clearly, discharges from agricultural drainages, urban runoff, and WWTPs are of lesser quality than surface waters. Surface waters are often treated as dilution for contaminants contained in these discharge waters. Furthermore, it is well known that waters discharged from agricultural drainages have higher temperatures than the surface waters that they discharge to. The percent of UIF released for fish and wildlife beneficial uses should be measured as reservoir releases, and then protected from diversions to the downstream compliance location.</p>	<p>Agriculture drainage, urban runoff, and wastewater treatment plant discharges remain subject to all applicable waste discharge requirements for the attainment of water quality objectives and narrative objectives. The majority of flow contributing to attainment of the LSJR flow objectives is expected to be from reservoir releases. Please see Master Response 3.2, Surface Water Analyses and Modeling, for additional information on the calculation of unimpaired flow.</p>

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1171	17	<p>[From ATT3:]</p> <p>SED Chapter: 2</p> <p>Page #: 2-19</p> <p>SED Text, Paragraph, Sentence in Question: "2.4 Tuolumne River-2.4.2 Water Diversion and Use-Modesto Irrigation District"</p> <p>Comment: The SED states that Modesto Irrigation District (MID) provides water and electrical services to a "...small portion located in Calaveras County around the New Don Pedro Dam". The report appears to mistake Calaveras County for Tuolumne County. (map of service area <a href="http://www.mid.org/mid-map.pdf">http://www.mid.org/mid-map.pdf</a>)</p>	<p>The text has been corrected in the SED. This modification does not change any conclusions identified in Chapter 2, Water Resources.</p>
1171	18	<p>[From ATT3:]</p> <p>SED Chapter: 2</p> <p>Page #: 2-21</p> <p>SED Text, Paragraph, Sentence in Question: "2.4 Tuolumne River-2.4.3 Flow Requirements"</p> <p>Comment: Table 2-13 displays flows from the original FERC license, not the 1995 settlement flows, which have been required for the last 20 years. Using the current flow regime from the 1995 settlement agreement would give a more realistic view of the current state of the Tuolumne River.</p>	<p>As discussed in the SED Chapter 2, Water Resources, the settlement agreement with CDFW, established in 1995, proposed that Article 37 of the FERC license be amended to increase flows released from the New Don Pedro Dam.</p> <p>As discussed in the SED, Appendix F.1, Hydrologic and Water Quality Modeling, on the Tuolumne River, the existing minimum flow requirement is the 1995 FERC minimum flow requirement at La Grange Dam established in 1995 by Article 37 of the FERC license (Project Number 2299) in the settlement agreement between USBR and the California Department of Fish and Wildlife (CDFW).</p>
1171	19	<p>[From ATT3:]</p> <p>SED Chapter: Appendix C</p> <p>Page #: 3-13</p> <p>Comment: Table 3.12 FERC Project Number 2179 is for Merced River not Tuolumne River.</p>	<p>State Water Board staff has addressed this comment by correcting the title of SED, Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, Table 3.12. The text has been corrected in the SED. This modification does not change any conclusions identified in the SED.</p>
1171	20	<p>[From ATT3:]</p> <p>SED Chapter: Appendix C</p> <p>Page #: 3-15</p> <p>Comment: The SED should define "advanced stage of maturity." From carcass survey monitoring, there are examples of female carcasses containing undeveloped eggs. So the advanced stage of maturity should refer to the development of sex organs when entering fresh water versus females with fully developed eggs ready for fertilization.</p> <p>Rapid movement was demonstrated in Department tracking data, but not all fish appear to have such rapid movement. Only fish migrating in September or early October, when water temperature was unfavorable to migrating adults, such as 18 C, displayed rapid movement into lower reaches of the tributaries or in the main stem SJR just downstream of the Stanislaus River. Migrating adults do not exhibit a crepuscular movement pattern. Based on telemetry data, fish movement patterns are random up and down stream movements (in</p>	<p>The additional information provided in the comment with regard to the life history of fall-run Chinook salmon does not affect the overall conclusion of Chapter 3, Alternative Description, that a more natural flow regime from the salmon bearing tributaries (Stanislaus, Tuolumne, and Merced Rivers) is needed during the February through June timeframe; therefore, no change was made.</p>

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		<p>Delta movements may relate to tidal effects) in the SJR and tributaries.</p> <p>Based on the Department's survey data in the SJR tributaries, adults may build redds and spawn up to 70 days after freshwater entry, versus a few weeks as stated in the report.</p>	
1171	21	<p>[From ATT3:]</p> <p>SED Chapter: Appendix C</p> <p>Page #: 3-16</p> <p>SED Text, Paragraph, Sentence in Question: section 3.2.3 third paragraph</p> <p>Comment: The Department's [CDFW's] aerial redd survey has not been conducted in the SJR basin.</p>	<p>The information provided in the comment does not change impact determinations in Chapter 7, Aquatic Biological Resources, or affect the benefits analyses provided in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30. Therefore, no change was made.</p>
1171	22	<p>[From ATT3:]</p> <p>SED Chapter: 3</p> <p>Page #: 3-17, 3-18</p> <p>Comment: It is very important that the State Water Board identify the responsible parties for monitoring and reporting. There are clear examples in the Sacramento River and Central Valley where parties do not agree on who is responsible for the coded-wire tagging program monitoring. Accordingly, the monitoring does not get performed.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding the STM Working Group and the responsible parties for monitoring and reporting.</p>
1171	23	<p>[From ATT3:]</p> <p>SED Chapter: Appendix C</p> <p>Page #: 3-24</p> <p>Comment: SJR basin monitoring program CWT releases/recapture was done by the Department [CDFW] and one time by Cramer and Associates. Additional monitoring includes fish counting weirs at Stanislaus and Tuolumne rivers by FishBio. The Mossdale trawl is conducted by both USFWS and CDFW. In addition, rotary screw traps are operated by FishBio.</p>	<p>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.</p>
1171	24	<p>[From ATT3:]</p> <p>SED Chapter: 3</p> <p>Page #: 3-34</p> <p>SED Text, Paragraph, Sentence in Question: "However, pursuant to the San Joaquin River Restoration Program (SJRRP), spring-run Chinook salmon are planned to be reintroduced to the Upper SJR no later than December 31, 2012. Flows needed to support this reintroduction are being determined and provided through the SJRRP. During the next review of the Bay-Delta Plan, the State Water Board will consider information made available through the SJRRP process, and any other pertinent sources of information, in evaluating the need for any additional flows from the Upper SJR Basin to contribute to the</p>	<p>Chapter 17, Cumulative Growth-Inducing Effects, and Irreversible Commitment of Resources, includes the restoration flows in the cumulative project list and the description the commenter notes is included in that discussion.</p>

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		<p>narrative LSJR flow objective."</p> <p>Comment: It is past December 2012, and portions of the SJRRP have been implemented. The SED should now incorporate the new information from this program.</p>	
1171	25	<p>[From ATT3:]</p> <p>SED Chapter: 3</p> <p>Page #: 3-8</p> <p>SED Text, Paragraph, Sentence in Question: "The lower bound represents the minimum quantity of water at which there is a reasonable expectation that fish and wildlife protection goals will be achieved, although at this level, it may require other actions, such as non-flow measures."</p> <p>Comment: The lower bound description states it may require non-flow measures to reasonably protect fish and wildlife; the State Water Board has limited authority to require these non-flow measures. In the absence of implementing non-flow measures., there is no reasonable assurance that the lower bound objectives will reasonably protect fish and wildlife.</p>	<p>As explained in Chapter 16, Evaluation of Other Indirect and Additional Actions, the State Water Board would not directly undertake non-flow actions because that is beyond its regulatory authority in response to implementation of the plan amendments. Rather, the entities affected by the LSJR alternatives or the resource agencies with authority to undertake these actions could do so in order to inform the body of scientific information on special-status fish to help make adaptive implementation decisions regarding the LSJR flow objectives. Accordingly, Chapter 16 provides a description and environmental analysis of non-flow measures that affected entities may undertake in the plan area.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, and Master Response 5.2, Incorporation of Non-Flow Measures, regarding State Water Board authorities related to non-flow measures and the incorporation of non-flow measures into Appendix K, Revised Water Quality Control Plan.</p> <p>Please refer to Maser Response 3.1, Fish Protection, for the justification and description of the plan amendments for protecting fish.</p>
1171	26	<p>[From ATT3:]</p> <p>SED Chapter: 4</p> <p>Page #: throughout</p> <p>Comment: Description of Ch. 16: Throughout Ch. 4, Ch. 16 is described. The non-flow alternatives are listed several times. The description of these alternatives is unclear in certain sections and leads the reader to believe that compliance with flow objectives could result from the implementation of non-flow actions only. The document should clarify how the use of non-flow actions could be used in conjunction with flow actions for compliance with the flow objectives.</p>	<p>As stated in Appendix K, Revised Water Quality Control Plan, the recommended non-flow measures are complementary to the LSJR flow objectives for the protection of fish and wildlife. Non-flow measures are actions parties could conceivably take under the adaptive implementation framework described in the plan amendments to adjust the percentage of unimpaired flow (within the range) needed to protect fish and wildlife upon approval from the State Water Board. Please see Master Response 5.2, Incorporation of Non-Flow Measures, for further discussion on non-flow measures and the use of non-flow measures in conjunction with flow actions to address Delta aquatic ecosystem needs.</p>
1171	27	<p>[From ATT3:]</p> <p>SED Chapter: 5</p> <p>Page #: 5-33, 5-34</p> <p>SED Text, Paragraph, Sentence in Question: Last paragraph, last sentence, "4,000 TAF/y". Third paragraph, last sentence, " ... 4,100 TAF/y."</p> <p>Comment: Both volumes are applied to the SWP pumping contract demands, so there is an inconsistency in the values.</p>	<p>The text was modified to change 4,000 TAF/y to 4,100 TAF/y. This edit does not change any conclusions made in Chapter 5, Surface Hydrology and Water Quality.</p>
1171	28	<p>[From ATT3:]</p> <p>SED Chapter: 5</p> <p>Page #: 5-54</p>	<p>Flow at Vernalis will not be reduced because the Program of Implementation requires USBR to maintain the EC at Vernalis at or below 0.7 dS/m April–August, as it is under the current objective, to provide assimilative capacity for salinity degradation downstream of Vernalis. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of the responsibilities of DWR and USBR.</p>



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Ltr#	Cmt#	Comment	Response
		<p>SED Text, Paragraph, Sentence in Question: "Because flows are not expected to change in response to the SDWQ alternatives, the WSE model was not needed to assess effects of the SDWQ alternatives."</p> <p>Comment: Once USBR's permit is renewed, and they start to manage to meet the 1mS WQO versus the 0.7 mS, then flow at Vernalis may be reduced.</p>	
1171	29	<p>[From ATT3:]</p> <p>SED Chapter: 5</p> <p>Page #: 5-82 to 5-83</p> <p>SED Text, Paragraph, Sentence in Question: Table 5-23</p> <p>Comment: It would be better if the results were presented on a weekly basis because of the wide variability throughout a given month. For example, October starts out very warm and ends very cool. Also it would be more comprehensible if the results are presented as the predicted temperature instead of plus/minus.</p>	<p>The State Water Board strived to present data and tables in the SED clearly and in plain language. The recommended edit does not contradict the information contained in Chapter 5, Surface Hydrology and Water Quality, and would not change the discussion in Chapter 5. Therefore, the suggested change identified by the commenter has not been made in the SED.</p> <p>Please see Master Response 2.3, Presentation of Data and Results in SED and Responses to Comments, regarding presentation of data and results. In addition, the temperature results presented in Chapter 5 are provided largely as an overview of temperature effects. The water temperature assessment in Chapter 7, Aquatic Biological Resources, and Appendix F.1, Hydrologic and Water Quality Modeling, provides more detail.</p>
1171	30	<p>[From ATT3:]</p> <p>SED Chapter: 6</p> <p>Page #: 6-13</p> <p>SED Text, Paragraph, Sentence in Question: "Although the channel capacity is 8,000 cfs, there is agriculture within the floodway that may be affected by seepage and high water tables at flows above 1,500 cfs (McAfee 2000; Kondolf et al. 2001). Concerns about seepage involve potentially adverse impacts that may occur to agricultural crops such as damage to the root systems of tree crops when the groundwater level rises due to high river flows ..."</p> <p>Comment: Over the years the USACE acquired, through easement or fee title, property within the 8,000 cfs floodway that extends from Goodwin Dam to the San Joaquin River confluence for flowage, flooding, and habitat conservation purposes. The USACE easement properties now mitigate the impacts of flows over 1,500 cfs, so easements now permit flexibility to implement recommended fishery flow levels above 1,500 cfs to protect the fishery resource in the lower Stanislaus River (Brantley 2016). Flow up to 8,000 cfs should be considered in future New Melones operation planning because impacts due to seepage above 1,500 cfs should not be considered adverse.</p>	<p>The information contained in Brantley (2016) does not contradict the information contained in Chapter 6 or the analysis conclusion of less than significant impacts with respect to seepage on agricultural lands along the Stanislaus River (Brantley, P. 2016); therefore, no change was made.</p>
1171	31	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-9</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.1 Fish Species (p 7-9)</p> <p>Comment: "Blackfish" should be Sacramento Blackfish</p>	<p>The content provided by the commenter is noted, but the change of the name to the proper common name will not change the implication of the sentence, as all the species are identified to occur in the San Joaquin River drainage in California. "Sacramento" is implied when using "blackfish." The changing of the fish name to the proper common name does not change the impact determination of Chapter 7, Aquatic Biological Resources; therefore no change was made to the SED.</p>
1171	32	<p>[From ATT3:]</p>	<p>The content provided by the commenter is noted, but the suggested updates will not change the impact</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>SED Chapter: 7</p> <p>Page #: 7-16</p> <p>Comment: Rearing temperatures: while all information stated is technically correct in certain context, the applicability of the temperature ranges should be described. There are significant differences between laboratory and field studies as well as size and maturation levels between studies. The amount of food present is also very important, as is alluded to in the Myreck Cech citation but not fully explained. The Department suggests either expanding this section greatly or changing it such that the discussed information is better explained.</p>	<p>determination for Chinook salmon juveniles in Chapter 7, Aquatic Biological Resources; therefore no change was made.</p>
1171	33	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-35</p> <p>Comment: Please clarify the applicability of the winter-run example for the LSJR watershed.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis, the information provided is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	34	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-13</p> <p>SED Text, Paragraph, Sentence in Question: Table 7-3 Recreationally Important Fish Species in the Plan Area-Largemouth Bass (p 7-13)</p> <p>Comment: Habitat- Largemouth bass are found in the main stem of the tributaries and LSJR, not just backwaters.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	35	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-14</p> <p>SED Text, Paragraph, Sentence in Question: Table 7-3 Recreationally Important Fish Species in the Plan Area-Largemouth Bass (p 7-14)</p> <p>Comment: Habitat- Striped bass are also found in rivers (tributaries and LSJR).</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	36	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-16</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.1 Fish Species. Chinook Salmon. Central Valley Fall Run (p 7-16, 2nd paragraph)</p> <p>Comment: The discussion about optimum growth rates is confusing. In one sentence it</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; no change has been made to the SED.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>notes optimum temperature for growth occurs at temperatures of (10-15.6 C) but the next sentence states optimum growth rates occur at about 19 C when fed maximal rations. Please distinguish the different rations or conditions (e.g., laboratory versus in situ) which differentiate the conditions which allow optimal growth at the different temperatures.</p>	
1171	37	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-17</p> <p>SED Text, Paragraph, Sentence in Question: Under, "Rainbow trout and Central Valley Steelhead," first paragraph</p> <p>Comment: Influence of hatchery stocking should be taken from Garza and Pearse (2008), not from Moyle (2002).</p>	<p>The suggestion made by the commenter does not contradict the information contained in Chapter 7, Aquatic Biological Resources, and would not change the impact determination made in Chapter 7. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	38	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-17</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.1 Fish Species. Chinook Salmon. Central Valley Spring Run (p 7-17, 1st paragraph) "In 2010, the SJR reconnected to the LSJR at the Merced River confluence."</p> <p>Comment: This sentence suggests that the SJR has been connected continually since 2010. However, the connection between the upper SJR and lower SJR has been intermittent.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	39	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-17</p> <p>SED Text, Paragraph, Sentence in Question: "The major goal of the SJRRP is to establish a naturally self-sustaining population (see Chapter 17, Cumulative Impacts, Growth- Inducing Effects, and Irreversible Commitment of Resources, for a discussion of the program) (USBR 2011)."</p> <p>Comment: The sentence is missing words (of Salmon).</p>	<p>The typo has been corrected. The correction does not result in a change to any conclusion in Chapter 7, Aquatic Biological Resources.</p>
1171	40	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-27</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.1 Fish Species. Striped Bass (p 7-27, 1st paragraph)</p> <p>Comment: The paragraph notes that striped bass are anadromous and only return to</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		freshwater to spawn. However, there are also resident striped bass in these rivers.	
1171	41	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-3</p> <p>SED Text, Paragraph, Sentence in Question: Footnote 5: "...but distinguished taxonomically by their different forms."</p> <p>Comment: Change to: ...but distinguished by their different life-history forms.</p>	<p>The State Water Board strived to meet high standards of technical writing and made editorial corrections to the Final SED where appropriate. Many commenters provided editorial suggestions that were considered a matter of preference but were not necessary and would not change the analyses or conclusions contained in the SED. The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	42	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-31</p> <p>SED Text, Paragraph, Sentence in Question: Table 7-4 Geographic and Seasonal Occurrence of Indicator Fish Species and life Stages (p 7-31)</p> <p>Comment: Table 7-4 may be more appropriately placed in Section 7.2.1.</p> <p>Central Valley fall-run Chinook salmon-spawning/incubation--should include January.</p> <p>Rainbow Trout- Adult migration- The table suggests that all fish migrate, and that they are only present in the reservoirs and not river downstream of dam.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	43	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-32</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Stanislaus River. Indicator Species. Fall-run Chinook Salmon (p 7-32, 2nd paragraph)</p> <p>Comment: Spawner abundance estimates are discussed up to 1998. CDFW suggests that the report include estimates of the most recent monitoring data.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	44	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-34</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Stanislaus River. Environmental Stressors. Introduced Species and predation(p 7-34)</p> <p>Comment: Please clarify the applicability of winter-run predation rates for the LSJR watershed. (last sentence)</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
1171	45	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-34, 7-39, 7-43</p> <p>SED Text, Paragraph, Sentence in Question: Water Quality sections</p> <p>Comment: Recommend updating the Water Quality sections with the impaired waters list using the State Water Board adopted 2012 list as well as the Central Valley Water Board adopted 2014 list.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	46	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-35</p> <p>SED Text, Paragraph, Sentence in Question: In Introduced Species and Predation: Use of term 'predated' for preyed upon</p> <p>Comment: Recommend changing 'predated' to 'preyed upon,' throughout the report.</p>	<p>The State Water Board strived to meet high standards of technical writing and made editorial corrections to the Final SED where appropriate. Many commenters provided editorial suggestions that were considered a matter of preference but were not necessary and would not change the analyses or conclusions contained in the SED. The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	47	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-35</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Tuolumne River. Tuolumne River below New Don Pedro Reservoir (p 7-35)</p> <p>Comment: The habitat accessible to anadromous fish is generally considered to be 52 miles, not the stated 47 miles. Please clarify.</p>	<p>The typo has been corrected. The correction does not change any conclusions contained in Chapter 7, Aquatic Biological resources.</p>
1171	48	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-37</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Tuolumne River. Indicator Species. Steelhead (p 7-37 1st paragraph)</p> <p>Comment: Please expand the description and conclusions from the cited tagging study.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	49	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-38</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2. Reservoirs, Tributaries, and LSJR.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED. Please also see Master Response 5.2, Incorporation of Non-Flow Measures, for gravel augmentation or other habitat restoration projects that have occurred on the Tuolumne River.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Tuolumne River. Environmental Stressors. Habitat Alteration(p 7-38 3rd paragraph)</p> <p>Comment: The report states that 14 channel restoration projects were identified in the Habitat Restoration Plan for the Lower Tuolumne River Corridor. It would be helpful if the report included how many projects have been completed to date.</p>	
1171	50	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-38</p> <p>SED Text, Paragraph, Sentence in Question: Table 7-6. Tuolumne River Gravel Augmentation Projects (p 7-38)</p> <p>Comment: Table is incomplete, other gravel restoration projects have occurred.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED. Please also see Master Response 5.2, Incorporation of Non-Flow Measures, for gravel augmentation or other habitat restoration projects that have occurred on the Tuolumne River.</p>
1171	51	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-39, 7-142</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Tuolumne River. Environmental Stressors. Introduced Species and Predation (p 7-39)</p> <p>Comment: FishBio (2013) study was found by FERC to have limitations on its applicability to the entire river. Estimates of predators were produced using areas known to have higher predator density than typical for the entire river. Predation rate monitoring and estimates coincided with unusually low flow and elevated water temperatures, which favor conditions to support non-native warm water fishes. This study may not represent typical conditions for predation rates, so the caveats should be presented in the report.</p>	<p>Please see Master Response 3.1, Fish Protection, regarding the limitations of the findings of the Tuolumne River Fish Predation Study.</p>
1171	52	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-39</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Tuolumne River. Environmental Stressors. Hatchery Operations (p 7-39) "As discussed above, large numbers of unmarked hatchery salmon are released into the Merced River each year and may stray into the Tuolumne River"</p> <p>Comment: The report does not previously provide information on the possible magnitude of hatchery proportions on Tuolumne River escapement. Please include the analyses or citations to support possible hatchery influences on Tuolumne River escapement.</p>	<p>The suggestion made by the commenter does not contradict the information contained in Chapter 7, Aquatic Biological Resources, and would not change the impact determination made in Chapter 7. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	53	<p>[From ATT3:]</p> <p>SED Chapter: 7</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>Page #: 7-39</p> <p>SED Text, Paragraph, Sentence in Question: "In recent years, up to 200,000 hatchery- origin salmon from the Merced River Hatchery have been released annually in the Tuolumne River."</p> <p>Comment: "Recent years" may not be accurate, Merced River hatchery fish have not been released in the Tuolumne River in at least 5 years.</p>	
1171	54	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-39</p> <p>SED Text, Paragraph, Sentence in Question: "Fish produced by the hatcheries have the potential to negatively affect natural fall-run Chinook salmon by displacing wild salmonid juveniles through competition and predation, competing with natural adults for limited resources, and hybridizing Central Valley Chinook salmon with fish from outside the SJR Basin (CDFG 2011a)."</p> <p>Comment: The last part of the sentence is confusing because the rest of the paragraph discusses fish straying from the Merced hatchery which is part of the SJR Basin.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	55	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-40</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Merced River. Merced River below Crocker- Huffman Dam (p 7-40 2nd paragraph)</p> <p>Comment: Merced River Hatchery also releases production fish into the San Joaquin River at Jersey Point.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	56	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-40</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Merced River. Indicator Species. Fall Run Chinook Salmon (p 7-40)</p> <p>Comment: CDFW does not currently operate a RST on the Merced River (monitoring ended in 2003).</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	57	<p>[From ATT3:]</p> <p>SED Chapter: 7</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>Page #: 7-42</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. Merced River. Environmental Stressors. Introduced Species and Predation (p 7-42) "As discussed previously, some hot-spots exists, such as in-river mining pits provide habitat for largemouth bass and other nonnative predatory fish species (Grossman et al. 2013)."</p> <p>Comment: The report could help the reader by stating the location in the report where predation hot-spots were discussed.</p>	
1171	58	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-44</p> <p>SED Text, Paragraph, Sentence in Question: 7.2.2 Reservoirs, Tributaries, and LSJR. LSJR. (p 7-44 1st paragraph)</p> <p>Comment: Scientific name for Sacramento Blackfish is given- this is not the first time the species was mentioned. (Similar issues throughout the section)</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p>
1171	59	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-49</p> <p>SED Text, Paragraph, Sentence in Question: In Water Quality: temperatures ... regularly exceed 77F (Moyle 2002).</p> <p>Comment: Throughout the report, there is too much reliance on Moyle (2002) as a source, when there are other, original sources available, such as in this case regarding stream temperatures.</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED.</p> <p>Please see Master Response 3.1, Fish Protection, for information about fish analyses and consideration of other information used in the development of the SED.</p>
1171	60	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-66</p> <p>SED Text, Paragraph, Sentence in Question: 7.4.2. Methods and Approach. LSR Alternatives. Water Temperature and Dissolved Oxygen (p 7.66 paragraph 3)</p> <p>Comment: The Department agrees that there have been limited studies as to the effect of depressed dissolved oxygen levels on fish and wildlife in the San Joaquin River watershed upstream of the Delta; however, dissolved oxygen monitoring data from the San Joaquin River at Maze Blvd and the Stanislaus River at Ripon (from CDWR Water Data library and California Data Exchange Center) show periods where dissolved oxygen levels drop below the CVRWQCB Sacramento-San Joaquin River Basin Plan water quality objectives for dissolved oxygen. It appears that the report may misrepresent the environmental conditions where it states "DO levels are expected to remain within acceptable levels..."</p>	<p>Several studies have documented adverse effects from low dissolved oxygen (DO) in the San Joaquin River. Text has been modified to the SED, where the SED states otherwise.</p> <p>Please see Master Response 3.1, Fish Protection, for information about comments presenting information that do not conflict with or contradict the key scientific information used to support the impact determinations or benefit assessments in the SED.</p> <p>The plan amendments would improve water quality conditions over the baseline. Thus, the content provided by the commenter does contradict the information contained in the Chapter 7, Aquatic Biological Resources, or Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, and would not change the impact determination made in Chapter 7.</p>



**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
1171	61	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-72</p> <p>SED Text, Paragraph, Sentence in Question: 7.4.3 Impacts and Mitigation Measures. Impact Aqua 2 (p 7.72)</p> <p>Comment: The SED predicts an increase in end of September storage as a result of coldwater pool storage guidelines. Coldwater storage should be explicitly stated as a water quality objective, so that coldwater pool storage can be guaranteed.</p>	<p>See Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding reservoir carryover storage as it relates to the plan amendments and for modifications to the plan amendments requested by commenters.</p>
1171	62	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>SED Text, Paragraph, Sentence in Question: Possibly overlooked literature source for comparison of Stanislaus modeling results on stranding and isolation in response to flow fluctuations</p> <p>Comment: Brown, M.S., R.G. Titus, and W.S. Snider. 2008. Flow fluctuations effects on anadromous salmonid populations of the Stanislaus River, California. California Department of Fish and Game, Fisheries Branch, Final Contract Report to U.S. Bureau of Reclamation.</p>	<p>Please see Master Response 3.1, Fish Protection, for information about fish analyses and consideration of other information used in the development of the SED</p>
1171	63	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-142</p> <p>SED Text, Paragraph, Sentence in Question: 7.4.3 Impacts and Mitigation Measures. Impact Aqua 10 (p 7-142 3rd paragraph)</p> <p>Comment: See comment 7.2.2 Reservoirs, Tributaries, and LSJR. Tuolumne River. Environmental Stressors. Introduced Species and Predation (p 7-39)-about reference to FishBIO 2013.</p>	<p>Please see response to comment 1171-51.</p>
1171	64	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-102</p> <p>SED Text, Paragraph, Sentence in Question: 7.4.3 Impacts and Mitigation Measures. Impact Aqua 4 (p 7-102)</p> <p>Comment: Analysis does not seem to look at the effects of reservoir drawdown and loss of cold-water pool resulting in warm water at the dam, as occurred in fall 2015 on the Stanislaus River.</p>	<p>Water temperatures for the AQUA-4 analysis were modeled using the San Joaquin River Basin-Wide Water Temperature Model which incorporates the effects of coldwater storage on reservoir release temperatures based on reservoir stratification, reservoir geometry, and outlet configuration. See Appendix F.1, Hydrologic and Water Quality Modeling, for a detailed description of water temperature modeling.</p> <p>Please see Master Response 3.1, Fish Protection, specifically regarding the problem statement of fish decline and why flow is needed, best available science, and discussion on temperature.</p>
1171	65	<p>[From ATT3:]</p>	<p>Please see Master Response 3.1, Fish Protection, regarding a discussion on suboptimal temperature.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>SED Chapter: 7</p> <p>Page #: 7-114</p> <p>SED Text, Paragraph, Sentence in Question: Use of 64.4 F as upper optimal temperature per USEPA (2003)</p> <p>Comment: In addition to the USEPA criterion (64.4 F) for juveniles, empirical observations of steel head rearing in the lower American River have shown detrimental impacts to steel head at these temperatures.</p>	
1171	66	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-117</p> <p>SED Text, Paragraph, Sentence in Question: Modeling focused on Jul-Aug for rearing steelhead in summer.</p> <p>Comment: Recommend modeling also include September, possibly also October, when flow is still low and temperature is high.</p>	<p>Please see Master Response 3.1, Fish Protection, for information about fish analyses and consideration of other information used in the development of the SED.</p>
1171	67	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-117, 130</p> <p>SED Text, Paragraph, Sentence in Question: Use of 60.8 F for juvenile salmon in spring, 57.2 F for smolting in spring</p> <p>Comment: The report presents periods of the year with conflicting temperature due to overlapping life stages occurring simultaneously. The report should clarify how the different criteria are reconciled during the analyses for these periods.</p>	<p>Separate analyses were conducted for rearing and smolting salmon and steelhead based on the evaluation thresholds and primary locations and months of occurrence for these life stages as shown in Chapter 7, Aquatic Biological Resources, Table 7-18.</p>
1171	68	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Page #: 7-148</p> <p>SED Text, Paragraph, Sentence in Question: 7.4.4 Impacts and Mitigation Measures: Extended Plan Area (p 7-148 1st paragraph) "The upstream reservoirs on the Stanislaus and Tuolumne Rivers may experience substantial changes in reservoir volume, which are not experienced by the rim reservoirs in the plan area ..."</p> <p>Comment: On the Tuolumne River, the City and County of San Francisco (CCSF) is the operator of the upstream reservoirs, while Turlock Irrigation District and Modesto Irrigation District are the operators of the rim reservoir with a water banking agreement with CCSF for storage in Don Pedro. Although not fully independently operated, CCSF would have the ability to choose to store more water in their upstream reservoirs rather than use the water bank option, and most of the water use in Don Pedro is allocated to irrigation water for the</p>	<p>Please see Chapter 5, Surface Hydrology and Water Quality, Section 5.4.2, Methods and Approach, Extended Plan Area, for a description of the potential hydrologic changes at reservoirs upstream of the rim dams. As described in that section: "The primary means by which the extended plan area reservoirs and rivers might be affected is if water is bypassed by junior water rights holders, in accordance with the rules of priority and applicable law, to achieve the required flows in the Stanislaus, Tuolumne, and Merced Rivers and the LSJR." Table 5-19b shows the distribution of changes to annual average diversions under each of the LSJR alternatives. For both upstream and rim reservoirs, reservoir operators may elect to retain more water in reservoirs from year to year for different reasons (e.g., maintain a supply of water for water-supply diversions or to maintain reservoir head for hydropower).</p> <p>As described in Appendix K, Revised Water Quality Control Plan, there is an additional reason to maintain storage in the reservoirs; when implementing the plan amendments, the State Water Board will include minimum reservoir carryover storage targets or other requirements to help ensure that providing flows to meet the LSJR flow objectives will not have adverse temperature or other impacts on fish and wildlife or, if feasible, on other beneficial uses. This provision of Appendix K is more likely to increase carryover storage in the rim reservoirs than in the reservoirs farther upstream because the primary fish species of concern are</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>districts. Please clarify why upstream reservoirs could experience substantial changes in reservoir volume, while the rim reservoirs would not.</p>	<p>anadromous fish that use the rivers downstream of the rim reservoirs and because the river reaches with the warmest temperatures are located downstream of the rim reservoirs. Reservoir operations and carryover storage for rim reservoirs are discussed in Master Response 3.2, Surface Water Analyses and Modeling.</p> <p>With respect to CCSF, potential water supply effects may depend on different interpretations of agreements between CCSF and irrigation districts, as described in Appendix L, City and County of San Francisco Analyses, and in Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System.</p>
1171	69	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Comment: Water is habitat. Its velocity, vectors, temperature, dissolved solids, turbidity, depth, etc. are all "habitat". The Chapter should be clear that habitat for fish requires water. For example, spawning gravel without water is not "habitat".</p>	<p>The suggestion made by the commenter would not change the impact determination made in Chapter 7, Aquatic Biological Resources. For the purposes of the impact analysis the information given is sufficient; therefore, the content identified by the commenter has not been changed in the SED. Please see Master Response 5.2, Incorporation of Non-Flow Measures regarding the importance of flow and the role of non-flow measures as they relate to flow.</p>
1171	70	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Comment: Document is inconsistent in regards to temperature units- in some places Celsius temperatures are given in addition to Fahrenheit but not others. It would be helpful to provide temperatures in Celsius in addition to Fahrenheit throughout the document. Same issue for length, both millimeters and inches are given in some places but not others.</p>	<p>The State Water Board strived to meet high standards of technical writing and made editorial corrections to the Final SED where appropriate. Many commenters provided editorial suggestions that were considered a matter of preference but were not necessary and would not change the analyses or conclusions contained in the SED. The temperature convention used in Chapter 7 generally follows the unit of measurement used during data collection or by source document. The American Fisheries Society Publication Style Guide, allow for the use of either F or C (American Fisheries Society, 2016).</p>
1171	71	<p>[From ATT3:]</p> <p>SED Chapter: 7</p> <p>Comment: Please be consistent in the use of scientific names.</p>	<p>The State Water Board strived to meet high standards of technical writing and made editorial corrections to the Final SED where appropriate. Many commenters provided editorial suggestions that were considered a matter of preference but were not necessary and would not change the analyses or conclusions contained in the SED.</p>
1171	72	<p>[From ATT3:]</p> <p>SED Chapter: 11</p> <p>Page #:11-1</p> <p>SED Text, Paragraph, Sentence in Question: "This chapter analyzes those alternatives and assumes that any increases in unimpaired flows would reduce surface water supplies that are available for irrigation purposes."</p> <p>Comment: The assumption is worded incorrectly. An increase in unimpaired flow would increase the water availability for all beneficial uses for all alternatives. However, an increase in the percent of unimpaired flow allocated to the reasonable protection of fish and wildlife beneficial uses could reduce the surface water supplies that are available for irrigation purposes.</p>	<p>Chapter 11, Agricultural Resources, is analyzing agricultural resource impacts that "could result from the Lower San Joaquin River Alternatives" (Chapter 11, Section 11.1, Introduction). In this context it is clear that the unimpaired flow being discussed is the flow that would implement the flow objective for the reasonable protections of fish and wildlife. Therefore, no change is necessary.</p>
1171	73	<p>[From ATT3:]</p> <p>SED Chapter: 11 &amp; 19</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, regarding the State Water Board's consideration of beneficial uses. Please see Master Response 3.1, Fish Protection, for information on fish protection. Chapter 11, Agricultural Resources,</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>Page #: 11-1, 19-49</p> <p>SED Text, Paragraph, Sentence in Question: "It should be noted that this likely presents a more conservative (i.e., "worst case") estimate of potential acreage reduction than may actually occur.</p> <p>The reservoir release temperature is a "best case" scenario, and represents temperature habitat that few fish actually experience because temperatures can warm rapidly moving downstream under many flow conditions."</p> <p>Comment: The SED makes comparisons between worst case scenarios for agriculture and best case scenarios for fish and habitat. It does not appear that the Water Board analyzes equivalent metrics to equally balance beneficial uses. This method will overestimate benefits for fish and wildlife per measure of flow, thus underestimate the amount of flow necessary to protect the beneficial uses. Likewise, the analysis can overestimate the adverse impacts to agricultural beneficial uses. Ultimately, equivalent metrics for adverse impacts and beneficial impacts should be used to "balance" the use of water to support beneficial uses.</p>	<p>discusses impacts on agriculture and was not intended to address nonagricultural aspects of the project. Furthermore, the purpose of the SED is to compare the potential effects of the alternatives on environmental resources, not to compare the potential effects on one resource to those of another resource.</p>
1171	74	<p>[From ATT3:]</p> <p>SED Chapter: 11</p> <p>Page #: 11-44</p> <p>SED Text, Paragraph, Sentence in Question: "For the purpose of this analysis, a significant impact would result if the impact on crop yield for salt-sensitive crops is greater than 10 percent. Above this level, it would become more difficult for farmers to mitigate impacts with modified irrigation practices (e.g., increased leaching) and would start to substantially reduce the acreage of these types of crops in the southern Delta."</p> <p>Comment: Ten percent appears to be an arbitrary threshold to measure reductions in crop yields. The report should provide citations to support the threshold where it becomes difficult enough to modify irrigation practices to represent an impact. The report should present the analysis of the annual variability of crop yields to show that a 10% reduction in yield could be statistically perceived. For example, estimated adverse impacts to aquatic life typically require adverse effects of 20-25% (e.g., percent effect in mortality or reduced reproduction, or population declines) to be considered toxic (SWRCB Draft Toxicity Policy). The SED should use comparable metrics to justify impacts.</p>	<p>The 10 percent yield reduction was selected based on effects on dry beans. The 10 percent value is just above the expected yield loss under a 10 percent leaching fraction for dry beans assuming median precipitation with an irrigation water quality of 1.4 dS/m (Appendix E). This level of leaching fraction is on the low end in the Delta and the water quality value is on the low end (i.e. higher salinity). Combined, these represent scenarios that are toward the extremes of Delta conditions and therefore provide a conservative analysis. It is not always appropriate to use comparable metrics because it may depend on the resource being evaluated. Information contained in Chapter 7, Aquatic Resources, Section 7.4.2, Methods and Approach, provides explanation for the different metrics used to evaluate impacts to aquatic resources.</p>
1171	75	<p>[From ATT3:]</p> <p>SED Chapter: 11</p> <p>Page #: 11-47, 11-52</p> <p>SED Text, Paragraph, Sentence in Question: " The precise amount of lands that are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that could be converted to nonagricultural uses cannot be precisely quantified. However, potential impacts, based on the crop reduction modeling results, can be qualitatively discussed to determine possible conversion to nonagricultural uses. In other words, the analysis uses decreased crop production as a proxy for potential conversion to</p>	<p>Please see Chapter 11, Agricultural Resources, Section 11.2.2, Lower San Joaquin River Watershed and Eastside Tributaries, for information on types of farmland, and Section 11.3, Regulatory Background Farmland Mapping and Monitoring Program, for information on irrigation requirements for types of farmland. Please see Master Response 3.5, Agricultural Resources, for information on Unique Farmland and irrigation requirements and the general approach to the consideration of conversion of Unique Farmland.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>nonagricultural uses."</p> <p>"Figure 11-9, for example shows that irrigated acreage in SSJID stays the same, at approximately 58,500 acres in most years under baseline."</p> <p>Comment: Unique farmland does not require a dependable irrigation supply (e.g., 8 of 10 years) (DOC 2004), so it should not have the same metric as the other farmland types (e.g., 80%) to indicate conversion to non-agriculture.</p> <p>The frequency of available irrigation (e.g., 8 out of 10 years) cannot be used to estimate the conversion of the desired agriculture to non-agricultural uses because unique farmlands don't require "dependable" water supplies (DOC 2004). Prime farmland and farmland of statewide significance may be converted to unique farmland due to the reduced abundance of available surface water supplies, but that does not equate to the conversion to non-agricultural use. Because the analysis was to determine whether the alternatives could "Potentially convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to nonagricultural use", the analysis using the frequency of irrigation overestimates the conversion to non-agricultural use.</p>	
1171	76	<p>[From ATT3:]</p> <p>SED Chapter: 11</p> <p>Page #: 11-47, 11-49</p> <p>SED Text, Paragraph, Sentence in Question: "At 30 percent unimpaired flow, the average acreage reduction for all irrigation districts increases from 1.2 percent (Table 11-15) to 2.3 percent (Table 11-16)."</p> <p>"If method 1 is used to increase the required percent of unimpaired flow to 30 percent unimpaired flow on a long-term basis, it is estimated that OID would experience an average decrease in irrigated acreage of 4.4 percent and MID would experience an average reduction in irrigated acres of 4.5 percent under 2009 conditions (Table 11-16). Therefore, impacts would be significant."</p> <p>Comment: The report should present the 95% confidence intervals around the estimates of average acreage reductions. The 1.2-2.3% and 4.4-4.5% differences are likely within the 95% confidence intervals of the average and not actually distinguishable from the average number of acres. Thus a finding of significant and unavoidable for Alternative 2 with adaptive implementation is not warranted.</p>	<p>Please see Appendix G, Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results, Section G.4.1, Description of the Statewide Agricultural Production Model, for information on the deductive method of modeling, which is superior to a statistical model for analyzing the effects of changes in the availability of water for agricultural production. A statistical approach would provide the confidence intervals identified by the comment; however, a statistical approach would not use mechanisms of cause and effect, linking land use, water supply and production, which SWAP uses. The SWAP model is the best available tool to analyze potential economic effects on agriculture based on rational grower decisions. It has been widely used and peer reviewed. It is infeasible for any model to account for the numerous decisions and real world variables related to agricultural economics and Chapter 11, Agricultural Resources, and Master Response 8.0, Economic Analyses Framework and Assessment Tools, and Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, acknowledge this. Models, including SWAP, allow comparative analyses to inform decision makers and the public regarding potential changes between baseline conditions and alternative conditions. Please see Master Response 8.1 for a description of the SWAP model and its capabilities.</p>
1171	77	<p>[From ATT3:]</p> <p>SED Chapter: 15</p> <p>Page #: 15-15</p> <p>SED Text, Paragraph, Sentence in Question: "The No Project Alternative could result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural uses as a result of the reductions in surface water diversions on the Stanislaus River (see Table 15-2)"</p>	<p>Please see Master Response 3.5, Agricultural Resources, regarding the use of the Statewide Agricultural Production (SWAP) model in the impact analysis in Chapter 11, Agricultural Resources. As described in Master Response 3.5, Chapter 11 provides a conservative analysis (i.e., worst case) that equates a reduction in available water supply to acres of designated farmland to a conversion to nonagricultural use. The decision to convert to nonagricultural use or to remain in agricultural production involves many different business decisions by the individual grower or rancher. A similar type of conservative analysis was applied to the potential water supply reduction modeled under the No Project Alternative as described in Chapter 15, No Project Alternative (LSJR Alternative 1 and SDWQ Alternative 1). Please see Master Response 8.1, Local Agricultural Economic Effects and the SWAP Model, for more information regarding the use of the SWAP</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Comment: Similar to Chapter 11, the analyses does not properly characterize unique farmland as requiring a dependable water supply. Assuming that a less than 8 out of 10 year irrigation frequency would result in farmlands converting to non-agricultural uses would overestimate the loss of agricultural use.</p>	<p>model in Chapter 11.</p>
1171	78	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-11</p> <p>Comment: The SED suggests that groundwater recharge projects in the Central Valley would reduce the amount of water available for agriculture irrigation; however, the SED should also highlight that groundwater recharge practices can prevent or minimize groundwater overdraft due to agricultural uses while replenishing water available for irrigation. Moreover, groundwater recharge projects could be beneficial and sustainable if they are coupled with floodplain restoration projects on the Eastern San Joaquin, Modesto, Turlock, and Merced Groundwater Sub basins, as well as with the implementation of the Sustainable Groundwater Management Act (SGMA). CDFW recommends a revision of the language addressing the anticipated cumulative impacts of groundwater recharge projects.</p>	<p>Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, regarding a discussion of SGMA, its relationship to the plan amendments, and its evaluation in the SED.</p> <p>Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources, notes in the discussion of SGMA that: "Given the directive to local agencies, and the backstop of state intervention if needed, it is anticipated that SGMA, along with other groundwater recharge, conjunctive use, and management projects would ... actually benefit groundwater resources." This text addresses the concern. No changes to the SED were made.</p>
1171	79	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-2</p> <p>SED Text, Paragraph, Sentence in Question: "Changes in timing and magnitude of flows in the plan area and reduced surface water availability for diversion that in turn have effects on groundwater. ...impact on the following resources in the plan area- Groundwater resources".</p> <p>Comment: Impacts to groundwater could be temporary or mitigated through the implementation and compliance with the Sustainable Groundwater Management Act as well as the State Water Board's enforcement of waste and unreasonable use.</p>	<p>Please see response to comment 1171-78 regarding groundwater impacts.</p>
1171	80	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-2</p> <p>SED Text, Paragraph, Sentence in Question: "As described in...with or without adaptive implementation would have a significant and unavoidable impact on the following resources in the plan area- Service providers, Energy and greenhouse gases".</p> <p>Comment: The California Renewable Portfolio Standard (RPS), was established in 2002 from Senate Bi111078, accelerated in 2006 from Senate Bill 107 and expanded in 2011 from Senate Bill 2. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase renewable energy resources to 33% by 2020. With the above requirement, impacts to greenhouse gases and service providers would be mitigated to less than significant and temporary. California Public Utilities Commission.</p>	<p>Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources, Cumulative Impact Analysis for Energy and Greenhouse Gas, describes the impact mechanisms and the GHG emissions results. The text acknowledges the RPS noted by the commenter and states: "RPS requirements would serve to reduce the carbon intensity of generated electricity, thereby helping to reduce the GHG emissions that would be associated with reduced hydropower generation and the increased use of electricity for groundwater pumping under LSJR Alternatives 3 and 4 with or without adaptive implementation." However, the mechanism that drives the impact determination is not the RPS but the potential emissions generated in response to implementation of the different LSJR alternatives evaluated. The text states: "However, even if 33 percent of electricity in California were to be generated using renewable resources and the total GHG emissions resulting from LSJR Alternatives 3 and 4 were reduced by 33 percent, LSJR Alternatives 3 and 4 with or without adaptive implementation would still generate more than 10,000 MT CO2e per year (thereby exceeding the threshold) and would make a cumulatively considerable incremental contribution. Thus, impacts related to the energy and GHS resource under LSJR Alternatives 3 and 4 with or without adaptive implementation would be cumulatively considerable. There are no feasible mitigation measures beyond those proposed in Chapter 14, Energy and Greenhouse Gases,</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		2016. Renewables Portfolio Standard. <a href="http://www.cpuc.ca.gov/RPS_Overview/">http://www.cpuc.ca.gov/RPS_Overview/</a> . Accessed on October 18, 2016.	Section 14.4.3, Impacts and Mitigation Measures, to reduce this cumulative impact to less-than-significant levels."
1171	81	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-28</p> <p>Comment: The impacts discussion regarding floodplain restoration projects states that "these restoration activities are not expected to result in a change to levee stability, flooding potential, or sediment and erosion potential". CDFW recommends clarifying that floodplain restoration projects (e.g., Dos Rios Ranch) can considerably decrease downstream flooding potential, in some cases, by reducing peak flows on the main river channel during the highest flood flow releases in large storm events.</p>	<p>The commenter is referring to a discussion in Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources, presenting cumulative impacts related to Flooding, Sediment, and Erosion. It notes that the LSJR alternatives would change flow patterns; however, the range of flows and the amount of sediment and gravel transport would be similar to baseline conditions. When measuring the cumulative impact of the LSJR alternative in combination with habitat restoration projects such as Dos Rios Ranch, the analysis notes that the cumulative impacts would be less than significant. The discussion does state: "floodplain projects would allow water to spread across a wider area, thus relieving constricted channels of flow that cause erosion or siltation."</p> <p>This text suggests a reduction in flow on the main river channel; however, the suggested clarification in the comment would not change the significance determination of the cumulative impact. Therefore, no changes were made.</p>
1171	82	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-45</p> <p>Comment: The SED impacts analysis states that "it is counter to the LSJR alternatives' purpose to provide additional flows during February- June to more closely mimic the natural hydrograph for the protection of fish and wildlife beneficial uses, and is therefore infeasible". This assertion should be followed by an explanation of the rationale behind the infeasibility to provide additional flows for the protection of biological resources during the February-June period, compared to year-round flow provisions.</p>	<p>The comment is referring to a portion of the cumulative impacts discussion that notes the LSJR alternatives could result in reduced flows in the fall on the Stanislaus and Tuolumne Rivers such that it could substantially degrade the visual character and quality of the views of the Tuolumne and Stanislaus Rivers, resulting in impacts that could be cumulatively considerable when viewed in combination with other projects. It is noted that providing more flows in the fall would mitigate the impact; however, providing higher flows in the fall would not satisfy the purpose of the LSJR Alternatives to provide additional flows during February-June for the protection of fish and wildlife.</p> <p>For more information on flows with respect to fish and wildlife protection, please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and to Master Response 3.1, Fish Protection, regarding year-round flows.</p>
1171	83	<p>[From ATT3:]</p> <p>SED Chapter: 17</p> <p>Page #: 17-8</p> <p>SED Text, Paragraph, Sentence in Question: "Resource areas with potential cumulative effects ...Flooding".</p> <p>Comment: Federal Energy Regulatory Commission Projects are required to comply with the Army Corps of Engineers Flood Control Rule Curves. Thus, any adjustment may be temporary and thus less than significant.</p>	<p>The comment is referring to the Projects Considered section of Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources. Page 17-8 lists the Delta Stewardship Council (DSC) Delta Plan. The DSC Delta Plan is different from Federal Energy Regulatory Commission Projects.</p> <p>To the extent that the comment is referring to the FERC Relicensing of the Don Pedro Hydroelectric Project, the discussion on page 17-9, notes that this project was considered as part of the cumulative analysis with respect to "flooding, sediment, and erosion" but no determinations of significance are made on page 17-8 or 17-9.</p> <p>Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources, Cumulative Impact Analysis for Flooding, Sediment, and Erosion notes: "The FERC projects would include the flows associated with the LSJR alternatives and any other flow adopted by FERC. Specifically, FERC projects undergoing relicensing must comply with conditions of water quality certification, such as the LSJR flow requirements, and any other minimum or bypass flows imposed through the relicensing process." These requirements would include the USACE flood control curves. The cumulative discussion in Chapter 17 goes on to note that the cumulative effects of these projects would not be substantially different from the less-than-significant effects analyzed in Chapter 6, Flooding, Sediment, and Erosion. No changes to the SED were made.</p>
1171	84	[From ATT3:]	Reformatting tables 19-3 to 19-14 to include weekly results would not change the overall conclusion that the

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>SED Chapter: 19</p> <p>Page #: 19-22 to 19-33</p> <p>SED Text, Paragraph, Sentence in Question: Table 19-3 to 19-14</p> <p>Comment: These tables are difficult to understand. It is recommended that the I results be presented on a weekly basis because of wide variability throughout a given month. For example, October starts out very warm and ends very cool. Also it would be more comprehensible if the results are presented as the predicted temperature instead of a percentage. It is also not very clear as to what the baseline is.</p>	<p>LSJR alternatives would provide significant temperature benefits to Central Valley fall-run Chinook salmon and Central Valley steelhead in the Stanislaus, Tuolumne, Merced, and LSJ Rivers. Please see Master Response 3.1, Fish Protection, for additional graphs of these temperature benefits.</p>
1171	85	<p>[From ATT3:]</p> <p>SED Chapter: 19</p> <p>Page #: 19-36</p> <p>SED Text, Paragraph, Sentence in Question: 19.2.3 Results of Temperature Evaluation-- Tuolumne River Reproduction October 1 to March 1(pg 19-36)</p> <p>Comment: RM 38 is near Roberts Ferry Bridge; however, the spawning reach extends to RM 29. The evaluation of suitable temperature for spawning should extend through the entire spawning reach.</p>	<p>For the reproduction evaluation time period, the State Water Board recognizes that suitable habitat for spawning generally exists in the upper half of the anadromous portion of each river, and that the ¼ river evaluation location (i.e., River Mile 38.8) is representative of much of the spawning reach. The suggested change would not alter the overall conclusion that the unimpaired flow alternatives would provide significant temperature benefits to Central Valley fall-run Chinook salmon and Central Valley steelhead will occur on the Stanislaus, Tuolumne, Merced, and LSJ Rivers.</p>
1171	86	<p>[From ATT3:]</p> <p>SED Chapter: 19</p> <p>Page #: 19-49</p> <p>SED Text, Paragraph, Sentence in Question: 19.2.4 Summary and Conclusions of Temperature Evaluation (last paragraph of section, pg 19-49)</p> <p>Comment: The section discusses the temperature disconnect between water temperatures above the dam and releases during the fall. There is discussion about the time delay on the Merced and Stanislaus rivers, but nothing about the fact that this temperature disconnect does not occur on the Tuolumne River. In fact, the water coming out of La Grange is quite a bit cooler than the upper river in the fall.</p>	<p>Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, Figure 19-9 shows average reservoir inflow and outflow temperatures on the Tuolumne River. Outflow temperatures are cooler than inflow temperatures for part of the year. However, the temperature of water released from a reservoir does not provide enough information to understand the availability of suitable temperature habitat. Flow is an extremely important part of moving cold releases downstream to create suitable habitat over many miles. Additionally, it is important to consider water temperatures at higher elevations, where salmonids historically had access, to fully understand temperature habitat alterations compared to natural conditions.</p>
1171	87	<p>[From ATT3:]</p> <p>SED Chapter: 19</p> <p>Page #: 19-61</p> <p>SED Text, Paragraph, Sentence in Question: 19.3.2 Methods of Floodplain Inundation Evaluation- Methods: Floodplain Versus Flow Relationships- Merced River (pg 19-61)</p> <p>Comment: Each river has a different amount of development/degradation/restoration which would affect the inundation thresholds. The applicability of thresholds from the Stanislaus and Tuolumne rivers may not be representative of Merced River floodplain</p>	<p>Please see Master Response 3.1, Fish Protection, regarding use of best available science, floodplain modeling, and expected benefits of increased floodplain inundation. As described in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, Section 19.3.2, Methods of Floodplain Inundation Evaluation, Methods: Floodplain Versus Flow Relationships, Merced River, surface widths of the Merced River from water temperature model are used to develop a reach-wide water surface area versus flow relationship to estimate floodplain acreage. The relationship indicates that floodplain inundation begins between 500 cfs and 1,000 cfs. State Water Board use of the upper end of the range (1,000 cfs threshold) conservatively estimates floodplain acreage.</p>



Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		potential.	
1171	88	<p>[From ATT3:]</p> <p>SED Chapter: 19</p> <p>SED Text, Paragraph, Sentence in Question: Lack of analysis of flow benefits to native fish populations Jul.-Jan.</p> <p>Comment: The SED should include benefits to native fishes during late summer- early fall juvenile steel head rearing period and fall immigration and spawning period for adult Chinook Salmon to complete the analyses in response to LSJR alternatives.</p>	<p>As described in 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, a primary limiting factor for fish populations on the tributaries is spring time flow. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding flow requirements in the February through June period. Please also refer to Master Response 3.1, regarding year-round flows.</p>
1171	89	<p>[From ATT3:]</p> <p>SED Chapter: 24</p> <p>Page #: 24-3</p> <p>SED Text, Paragraph, Sentence in Question: "G.O. Grading, PhD", as an additional contributor to the report</p> <p>Comment: Typo: G.O. Graening, PhD</p>	<p>The text has been corrected. The modification does not change any conclusion in the SED.</p>
1171	90	<p>[From ATT3:]</p> <p>SED Chapter: 19</p> <p>Page #: 19-47</p> <p>SED Text, Paragraph, Sentence in Question: Significant temperature improvements in the Stanislaus River primarily occur under 50%- 60% unimpaired flows, and in the Merced River primarily occur under 30%-60% unimpaired flows. Significant temperature improvements in the Tuolumne River occur under all alternative unimpaired flows with the least benefit occurring under 2.0% unimpaired flow and the most benefit occurring under 60%</p> <p>Comment: The conclusions of project benefits lack from not evaluating benefits to salmonid metrics such as, cohort replacement rates, survival, intrinsic population growth rates, etc., because arbitrary temperature improvements (e.g., improvements above baseline condition) give no insight as to the whether the conditions will support viable populations or just a delay in extinction or extirpation (e.g., the predicted improvements from the revised flow objectives will result in population growth rates of X). This analysis of temperature benefits is inconsistent with Water Board development of water quality criteria to protect designated beneficial uses, where any methodology used to derive water quality objectives must protect the beneficial uses (40 C.F.R. §131.11(a)). The current analysis in the SED does not evaluate the temperatures that are protective of the beneficial uses, only improvements from a degraded baseline. Developing temperature criteria for the SJR tributaries is particularly important because they are listed on the USEPA 303(d) for temperature impairments.</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. Reasonable contributions to these biological goals include, but are not limited to, meeting temperature targets. Please also refer to Master Response 3.1, Fish Protection, for a description of the importance of biological goals, and to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the relationship between the salmon doubling objective and the LSJR flow objectives.</p> <p>Also described in Appendix K, the program of implementation explains 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.</p> <p>Also described in Appendix K, the program of implementation describes non-flow measures, under the authority of other entities, which include, but are not limited to, improving reservoir operations and/or physical structures to maintain adequate water temperature conditions.</p> <p>Please refer to Master Response 2.1 for clarifying descriptions regarding modifications to the plan amendments. Please also refer to Master Response 2.2, Adaptive Implementation, for clarification regarding the adaptive implementation process. Please see Master Response 3.1, Fish Protection, regarding the adequacy of modeling to support the analyses. Specifically refer to the temperature subsection including the discussions regarding the use of USEPA recommended temperature criteria, and reductions in harmful and lethal temperatures anticipated with implementation of the plan amendments.</p> <p>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.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
1171	91	<p>[From ATT3:]</p> <p>SED Chapter: 23</p> <p>Page #: 23-27</p> <p>SED Text, Paragraph, Sentence in Question: "For the impact analysis, the water temperature modeling covers the time period from 197-2003."</p> <p>Comment: Typo: missing date.</p>	<p>The typographical error has been corrected. The modification does not change any conclusion in the SED.</p>
1171	92	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 1</p> <p>SED Text, Paragraph, Sentence in Question: 1st paragraph: "The Bay-Delta Estuary itself is one of the largest ecosystems for fish and wildlife habitat and production in the United States."</p> <p>Comment: The Bay-Delta Estuary itself is one of the largest ecosystems for fish and wildlife habitat and production in the United States, and its productivity is dependent upon adequate freshwater inflow from the main stem rivers and tributaries, which feed the estuary".</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>
1171	93	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 18</p> <p>SED Text, Paragraph, Sentence in Question: "Narrative &amp; Minimum 7-day running average flow rate (cfs) for February through June"</p> <p>Comment: The in-river flow regime should support all life stages of fish and wildlife including the temporal and spatial needs to maintain their genetic portfolio, which allows them to express the phenotypes necessary to utilize California's highly variable inter-annual hydroclimate (Dettinger and Cayan 2014; Sturrock et al. 2015). As a whole, California's inter-annual precipitation and subsequent streamflow are much more variable than the remainder of the United States, including other parts of the West Coast (Dettinger et al. 2011). Populations must contain the diversity (genotypic and phenotypic) to be able to be successful in variable hydrologic regimes, and maintaining population diversity is necessary for stabilizing ecosystem services (Schindler et al. 2010). There is clear evidence that different migratory phenotypes (e.g., fry, parr, and smolts) of Chinook salmon from the LSJR watershed contribute to the adult spawning population differentially, depending on, in part, the annual hydrologic conditions (Sturrock et al. 2015). The inability to predict which juvenile phenotype will be the most successful in any given year requires the flow management to support the entire range of phenotypes as best as 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>
1171	94	<p>[From ATT3:]</p>	<p>As discussed in Master Response 2.1, Amendments to the Water Quality Control Plan, changes were made to the SJR Vernalis base flow objective in response to comments. Multiple comments appeared to</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>SED Chapter: Appendix K</p> <p>Page #: 18</p> <p>SED Text, Paragraph, Sentence in Question: lower San Joaquin River Flows; February through June; 800 to 1200 cfs minimum flow rate at Vernalis: "Notwithstanding the above unimpaired flow requirement, a minimum base flow value between 800- 1,200 cfs, inclusive, at Vernalis shall be maintained at all times during February through June."</p> <p>Comment: As the San Joaquin River Restoration Program comes on line, upper SJR base flows, independent of east-side tributary flow, will increase. As currently written in the WQCP, it would be possible for the base flows to be met by main stem SJR flow only with little to no flow coming out of the SJR tributaries. The flow objectives should be designed to preserve the river flow from each tributary in addition to the upper SJR.</p>	<p>misunderstand the base flow objective as a flow value that could be met instead of the LSJR flow objectives on the tributaries. The base flow objective text was simplified to make it clearer that it must be met at all times during the February through June time period in addition to the LSJR percent of unimpaired flow objectives on the three eastside tributaries. The Vernalis base flow objective is in place to provide a minimal level of flow in the LSJR at Vernalis during the critically dry periods when the LSJR percent of unimpaired flow objective will not provide 800 – 1,200 cfs on the SJR at Vernalis.</p> <p>A one-word change was made to the second sentence in the second paragraph of the San Joaquin River Restoration Program (SJRRP). This modification changed the word “may” to “will” and is intended to highlight the State Water Board’s commitment to consider water quality objectives for the upper San Joaquin River, the stream system above the San Joaquin River’s confluence with the Merced River, in future updates to the Bay-Delta Plan. The San Joaquin River Restoration Program is required to restore and maintain fish in “good condition” on the upper SJR. The text in this section suggests an evaluation of the SJRRP flow contributions to flow and water quality conditions at Vernalis and, now, commits the State Water Board to considering water quality objectives for the USJR in future updates to the Bay-Delta plan.</p>
1171	95	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 19</p> <p>SED Text, Paragraph, Sentence in Question: Export limits_Apr. 15th through May 15th</p> <p>Comment: Note: Footnote No. 17, for export limits, identifies that the Executive Director has the authority to grant deviations for purposes of conducting short (undefined length) export recirculation studies. The wording in footnote 17 should be amended to include not only feasibility but also "biological (or ecological) efficacy" so that whatever study is conducted looks at a larger suite of beneficial uses rather than only focusing on feasibility.</p>	<p>The SED, Appendix K, Revised Water Quality Control Plan, Footnote 17 relates to the Export Limits identified in Table 3. As export limits are being addressed through a separate process, the suggested change will not be made here (please see Master Response 1.2, Water Quality Control Planning Process, regarding the separate and independent processes of the Bay-Delta plan update addressing different watersheds). As stated in Chapter 5, Surface Hydrology and Water Quality, the State Water Board is currently in the process of reviewing the export restrictions included in the 2006 Bay-Delta Plan as part of its periodic review of the plan (Section 5.4.2, Methods and Approach, Exports and Outflow). Through that process, the State Water Board will determine what changes, if any, should be made to the export restrictions (Section 5.4.2, Methods and Approach, Exports and Outflow). The State Water Board will then determine what actions are needed to implement changes to the flow and export objectives (Section 5.4.2, Methods and Approach, Exports and Outflow).</p>
1171	96	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 28</p> <p>SED Text, Paragraph, Sentence in Question: "By 2022, the State Water Board will fully implement the February through June LSJR flow objectives through water right actions or water quality actions, such as Federal Energy Regulatory Commission (FERC) hydropower licensing processes."</p> <p>Comment: Other requirements initiate within 180 days of OAL approval. It is unclear how these other STM related efforts would work if full implementation would not occur until 2022. For instance, it is likely that each tributaries' implementation would be staggered, based on the timing of permit renewals, etc. Suggest adding clarifying language to ensure phased implementation could occur regardless of when full implementation is in effect.</p>	<p>As stated in Master Response 2.1, Amendments to the Water Quality Control Plan, regarding LSJR flow program of implementation: "Implementation of the LSJR flow objectives may be phased over time to allow coordination with ongoing FERC proceedings and refine implementation actions; however, the State Water Board will fully implement the LSJR flow objectives by 2022."</p>
1171	97	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p>	<p>As clarified in Master Response 2.1, Amendments to the Water Quality Control Plan, the SED, Appendix K, Revised Water Quality Control Plan, states that it will “take actions as necessary to ensure that implementation of the LSJR flow objectives does not impact supplies of water for minimum health and safety needs, particularly during drought periods.” For more discussion of water supply for public health and safety and the Human Right to Water, please see Master Response 2.1, Amendments to the Water Quality</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Page #: 28</p> <p>SED Text, Paragraph, Sentence in Question: "implementation of the flow objectives does not impact supplies of water for minimum health and safety needs, particularly during drought periods."</p> <p>Comment: The language should clarify how minimum health and safety will be accounted for in the Annual Operations Plan.</p>	<p>Control Plan, Master Response 2.7, Disadvantaged Communities, and Master Response 3.6, Service Providers.</p>
1171	98	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 28</p> <p>SED Text, Paragraph, Sentence in Question: Implementation of Feb through June LSJR Flow Objectives (3rd paragraph) ... "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."</p> <p>Comment: The State Water Board should identify the minimum carryover storage targets or define the process by which that would occur.</p> <p>To guarantee the implementation of minimum carryover storage, the requirements should be an objective in Table 3. A "tbd" can be inserted until the objective is numerically defined and included as a footnote for how, where, when the objective will be defined. At a minimum, the water quality objective should be a narrative objective, e.g., "Minimum reservoir carryover storage shall be maintained, as feasible, to minimize impacts to water quality conditions and other beneficial uses outside of the February to June period, e.g., cold water storage."</p>	<p>As discussed in Master Response 2.1, Amendments to the Water Quality Control Plan, specific carryover requirements are not established at this time to avoid constraining future implementation. Reservoir operations can be modified to achieve the numeric and narrative objectives within the LSJR flow objective Program of Implementation framework. Numeric reservoir storage requirements would have the undesirable effect of limiting future options, resulting in water supply costs higher than necessary to achieve program goals.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding reservoir carryover storage.</p>
1171	99	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 29</p> <p>SED Text, Paragraph, Sentence in Question: Flow Requirements for February through June; First paragraph: "The required percentage of unimpaired flow does not apply to an individual tributary during periods when flows from that tributary could cause or contribute to flooding or other related public safety concerns, as determined by the State Water Board or Executive Director through consultation with federal, state, and local agencies and other persons or entities with expertise in flood management.</p> <p>Comment: The SED should clarify how flood prevention releases will be apportioned to each beneficial use in the "block of water" accounting.</p>	<p>As discussed in Master Response 2.2, Adaptive Implementation, a reservoir operator's flood control releases do not reduce the required percent of unimpaired flows later that month or in another month unless such releases were approved by either the Executive Director or the Board as part of an adaptive implementation action for the protection of fish and wildlife. Absent any such approval, the unimpaired flow percent must be provided on a seven-day running average.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan for additional discussion of this issue.</p>
1171	100	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p>	<p>In response to multiple comments regarding the respective roles of the Executive Director and the State Water Board in making adaptive adjustments to the flow requirements, the phrase regarding the Executive Director was removed from the first sentence of this section and addressed in a new sentence added to the end of the paragraph. This modification clarifies the roles of the Executive Director and the State Water</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Page #: 30</p> <p>SED Text, Paragraph, Sentence in Question: "a) The required percent of unimpaired flow may be adjusted to any value between 30 percent and 50 percent, inclusive. The Executive Director may approve changes within this range on an annual basis if all members of the Stanislaus, Tuolumne, and Merced Working Group (STM Working Group), described below, agree to the changes."</p> <p>Comment: Based on the proposed membership of the STM, it is very unlikely that all members would agree to an adjustment up or down from 40% UIF. Suggest that there is an alternative path based on evaluating implementation against biological goals or some other SWRCB evaluation process.</p>	<p>Board in adaptive adjustments to the flow requirements. The State Water Board can adjust the percent of unimpaired flow value or the Executive Director can make adjustments in the percent of unimpaired flow value if there is full agreement on the Stanislaus, Tuolumne, and Merced Working Group and the narrative objective and any biological goals are met. The State Water Board's role in managing these conditions within the adopted flow range is clear. These adjustments can be made without a formal declaration of a state of emergency and subsequent petitions to the State Water Board for temporary urgency change orders.</p>
1171	101	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 31</p> <p>SED Text, Paragraph, Sentence in Question: "Adaptive Methods for February through June Flows (sub-section C): "...If after June the STM Working Group determines that conditions have changed such that water held for release after June should not be released by the fall of that year, the water may be held until the following year. The Executive Director may approve changes on an annual basis if the change is recommended by one or more members of the STM Working Group."</p> <p>Comment: Note: if water is banked, then this water should be accounted for as storage, and protected against loss (i.e., either due to flood control releases and/or evapotranspiration) and be available for release per the STM group. The governance for how the STM working group will operate is not specifically identified in this version of the SED; the Department suggests the addition of clarifying language of the STM working group.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding the governance of the STM Working Group.</p>
1171	102	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 32</p> <p>SED Text, Paragraph, Sentence in Question: "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."</p> <p>Comment: Suggest that the language is clear that the SWRCB either facilitate the STM Working Group or provides a facilitator. This will help in ensuring a productive working group.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding the governance of the STM Working Group and clarification of the role of the State Water Board.</p>
1171	103	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 32</p>	<p>As discussed in Master Response 2.1, Amendments to the Water Quality Control Plan, Participation in the STM Working Group is voluntary and the State Water Board encourages all of its resource partners to participate and make recommendations to successfully implement the LSJR flow objectives. While the State Water Board lacks authority to fund staff at other agencies to participate in the STM Working Group, it will recommend that such staffing occur. State Water Board staff will establish the governance structure of the</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>SED Text, Paragraph, Sentence in Question: "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."</p> <p>Comment: This is a significant unfunded mandate for the Department [CDFW]. The Department will need a representative on the STM, as well as the high likelihood that subgroups will be established for each tributary that would require Department [CDFW] participation.</p>	<p>STM Working Group if invited organizations do not choose to participate.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for response to comments regarding the STM Working Group, including the establishment, membership, structure, and role of the Group.</p> <p>Master Response 2.2, Adaptive Implementation, also responds to comments on the STM Working Group.</p>
1171	104	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 32</p> <p>SED Text, Paragraph, Sentence in Question: Stanislaus, Tuolumne, and Merced Working Group, 2nd paragraph: "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."</p> <p>Comment: Note: while the entities that will comprise the STM working group have been identified, the number of individuals representing each organization and how this group will operate (e.g., majority rule) has not been identified. It is recommended that the number of representatives per entity is limited, that a rotating chairperson be appointed annually, and that rules for governance be established according to applicable state and federal law (e.g., Brown Act etc.). It should be stated that the STM working group is to be comprised of individuals possessing relevant scientific expertise to enable the STM working group to make scientifically informed recommendations and decisions.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information and clarification of the role and members of the STM Working Group.</p>
1171	105	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 33</p> <p>SED Text, Paragraph, Sentence in Question: The State Water Board will consider approval of the biological goals within 180 days from the date of the Office of Administrative Law's (OAL) approval of this amendment to the Bay-Delta Plan</p> <p>Comment: This is a short time period to provide biological goals for consideration by the Board. By generally stating biological goals for salmonids, there could be conflicting biological goals due to the flows only being quantified in the Feb-Jun time period. The SWRCB should clarify what the overarching implementation goal is for this effort to ensure</p>	<p>As stated in Master Response 2.1, Amendments to the Water Quality Control Plan, multiple commenters requested that the deadline for submitting biological goals to the Executive Director for approval to be extended from 180 days from the date of the Office of Administrative Law's (OAL) approval of the amendments to the Bay-Delta Plan to some period of longer duration after OAL approval. The State Water Board recognizes that 180 days is an ambitious schedule. The short timeline provides incentive for interested parties to work together to develop the biological goals so that they can be used to guide adaptive implementation. The program of implementation allows biological goals to be modified and updated based on new information. The 180-day time period remains unchanged in the plan amendments.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		the biological goals are useful for meeting the overarching goal (e.g., the support of all native species).	
1171	106	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 33</p> <p>SED Text, Paragraph, Sentence in Question: Implementation of the unimpaired flow requirement for February through June will require the development of information and specific measures to achieve the flow objectives and to monitor and evaluate compliance.</p> <p>Comment: Clear direction should be provided to ensure a mechanism is in place for the appropriate monitoring requirements to provide a full evaluation of the overall implementation. This should include any monitoring to evaluate the biological goals approved by the Board.</p>	<p>As stated in Master Response 2.1, Amendments to the Water Quality Control Plan, the program of implementation requires the STM Working Group or State Water Board staff as necessary to work with the Delta Science Program to develop and recommend specific actions to monitor and evaluate compliance with the unimpaired flow objective.</p> <p>The State Water Board will work with watershed partners to develop biological goals and will request review by and recommendations from the STM Working Group. The program of implementation recognizes the need to develop biological goals promptly and provides a description of types of biological goals needed to guide adaptive implementation methods, evaluate the effectiveness of the LSJR flow objectives, and inform future changes to the Bay-Delta Plan. Ideally, such goals would already be available to inform adaptive implementation, but it is not necessary for them to already be in place for adaptive implementation to proceed, as explained in Master Response 2.2, Adaptive Implementation.</p> <p>The State Water Board recognizes that currently unavailable information, such as biological goals, will be needed to inform adaptive management and has provided time to develop biological goals with watershed partners. The program of implementation provides 180 days from the date of the Office of Administrative Law's (OAL) approval of the amendment to the Bay-Delta Plan. The short timeline provides incentive for watershed partners to work together to develop basic biological goals to be used in adaptive implementation. Methods for using biological goals and other information to support adaptive management decisions will be determined by the State Water Board, working with the STM Working Group and the Delta Science Program. Biological goals may be modified based on new knowledge discovered by investigative science or new information developed through monitoring and evaluation activities from monitoring programs such as the SJRMEP.</p>
1171	107	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 33</p> <p>SED Text, Paragraph, Sentence in Question: Unimpaired Flow Compliance: "Implementation of the unimpaired flow requirement for February through June will require the development of information and specific measures to achieve the flow objectives and to monitor and evaluate compliance."</p> <p>Comment: Notes: the verbiage states that "...development of information and specific measures to achieve the flow objectives and to monitor compliance" however, no specifics or examples are provided. The Department [CDFW] suggests that the SED provide the examples of measures to achieve flow objectives.</p>	<p>Please refer to the response to comment 1171-106 regarding monitoring and biological goals. Please refer to Master Response 2.2, Adaptive Implementation, for examples of how the LSJR flow objectives might be achieved.</p>
1171	108	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 34</p> <p>SED Text, Paragraph, Sentence in Question: The STM Working Group or members or subsets of the STM Working Group, as appropriate, will be required to submit proposed annual plans for adaptive implementation actions (annual operations plans) for the coming season</p>	<p>As stated in Master Response 2.2 Adaptive Implementation, the Annual Adaptive Operations Plan is a plan for annual operations that will work under a reasonable range of hydrological conditions, because the actual hydrology will not be known; the plan will include a description of how unimpaired flows are calculated and how any adjustments will be made as updated information becomes available.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>by January 10 of each year for approval by the State Water Board or Executive Director.</p> <p>Comment: The Annual Operations Plan will need to be a "working plan" since forecast used for the January 10th Plan will not be accurate.</p>	
1171	109	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 34</p> <p>SED Text, Paragraph, Sentence in Question: The STM Working Group or members or subsets of the STM Working Group, as appropriate, will be required to submit proposed annual plans for adaptive implementation actions (annual operations plans) for the coming season by January 10 of each year for approval by the State Water Board or Executive Director.</p> <p>Comment: Notes: this is ambiguous as currently written given that up to three entities (STM working group, STM members, or sub-sets of the STM working group, etc.) could be required to provide an annual plan. To facilitate effective, and efficient, planning, and implementation, only one entity should be required to submit an annual plan. The WQCP should identify the specific entity that will be required to submit the plan.</p>	<p>As discussed in Master Response 2.1, Amendments to the Water Quality Control Plan, State Water Board staff will develop the Annual Adaptive Operations Plan if organizations invited to join the STM Working Group do not choose to participate in the STM Working Group.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for response to comments regarding the establishment, membership, structure, and role of the STM Working Group.</p>
1171	110	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 35</p> <p>SED Text, Paragraph, Sentence in Question: San Joaquin River Monitoring and Evaluation Program</p> <p>Comment: General comments: 1) a monitoring plan should have an overarching purpose. In this case, monitoring should be conducted to i) document WQCP objective compliance, ii) further refine WQCP objectives, iii) guide adaptive management, and iv) guide monitoring activities (i.e., identify if existing monitoring is sufficient). The expressed intent of monitoring is to ensure that tangible substantive progress towards achieving the overarching WQCP objective is being achieved, and if not, why not. Thus, the WQCP should include the overarching objective of creating and implementing a monitoring and evaluation program; 2) a date should be specified as to when the plan should be completed by; 3) an entity should be identified for plan preparation. Since the SWRCB will include monitoring as water right terms/conditions, perhaps they write the plan with STM working group assistance. If not, then perhaps the STM working group is charged with plan completion with the Board incorporating monitoring terms/conditions in to the permits they issue.</p>	<p>Please refer to Master Response 2.2, Adaptive Implementation, for information regarding monitoring and assessment, which states: "Specific responsibility for these various monitoring and assessment elements will be assigned when the State Water Board assigns responsibility for the LSJR flow objectives in water rights permits and licenses, and water quality certifications. Several commenters suggested that there should be oversight and review of this monitoring, in addition to State Water Board oversight. The following language has been added:</p> <p>"The State Water Board will request the Delta Science Program to conduct periodic reviews of the San Joaquin River Monitoring and Evaluation Program."</p> <p>Master Response 2.1 provides additional information about the San Joaquin River Monitoring and Evaluation Program and identifies all modifications to the plan amendments including the one provided above.</p>
1171	111	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 36</p> <p>SED Text, Paragraph, Sentence in Question: To inform the next year's operations and other activities, the State Water Board will require preparation and submittal of an annual report</p>	<p>Master Response 2.2, Adaptive Implementation, explains that the particular entities will be determined when the State Water Board determines responsibility for achieving the LSJR flow objectives.</p>



**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>to the State Water Board by December 31of each year.</p> <p>Comment: Please clarify which entities will be required to prepare and submit these reports.</p>	
1171	112	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 36</p> <p>SED Text, Paragraph, Sentence in Question: Additionally, every three to five years following implementation of this update to the Bay-Delta Plan, the State Water Board will require preparation and submittal of a comprehensive report that, in addition to the requirements of annual reporting, reviews the progress toward meeting the biological goals and identifies any recommended changes to the implementation of the flow objectives.</p> <p>Comment: Please clarify which entities will be required to prepare and submit these reports.</p>	<p>As stated in Master Response 2.2, Adaptive Implementation, the responsibility of the entity required to prepare and submit the Comprehensive Reports will be determined when the State Water Board determines responsibility for achieving the LSJR flow objectives.</p>
1171	113	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 40-52</p> <p>SED Text, Paragraph, Sentence in Question: B. Measures Requiring a Combination of State Water Board Authorities and Actions by Other Agencies</p> <p>Comment: Many waterways in the LSJR and Delta are currently identified as being impaired by salinity related impairments (e.g., electrical conductivity, total dissolved solids, or specific conductivity) (Table 2 [ATT1: ATT2], Attachment 1). In addition, the Central Valley Regional Water Quality Control Board has recently approved the addition of more LSJR and Delta waterways to the new impaired water list due to salinity impairments (Table 2 [ATT1: ATT2]). The diversion of water from rivers effectively reduces the assimilative capacity of the rivers to incorporate salt, as well as other contaminants, and causes adverse impacts to other beneficial uses. Water rights conditions in the LSJR watershed should require the implementation of salinity water quality standards to protect the appropriate beneficial uses until the necessary salt load reductions are implemented (e.g., through CV- SALTS or other control program).</p> <p>Two other identified impairments in the LSJR and Delta waterways, water temperature and dissolved oxygen, may be alleviated by increasing streamflow in these environments. The SED clearly presents benefits of reduced water temperature conditions in the watershed from increased %UIF remaining in the rivers. This inverse relationship is, in part, a function of the water's residence time. Increased residence time allows for the water to assimilate heat units, thereby increasing temperature. In addition, increased residence time in water bodies allows an increase in biochemical oxygen demand, thereby decreasing dissolved oxygen (Gowdy and Grober 2005; NCRWQCB 2006). Reduced flow in the San Joaquin River has specifically been identified as a major contributor of low dissolved oxygen in the Stockton Deep Water Ship Channel (Gowdy and Grober 2005). Increased flow from the LSJR tributaries through the Delta may result in improved dissolved oxygen conditions in the Stockton DWSC and other impaired Delta waterways.</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 1.2, Water Quality Control Planning Process, regarding the authorities of the State Water Board to reasonably protect beneficial uses and see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of the plan amendments. Please also see Master Response 2.1 regarding commenters' suggested modifications to the plan amendments, including the section discussing modifications to the plan amendments and suggested modifications that were not made. Refer to the discussion of other types of water quality objectives</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Furthermore, the State Water Board has the authority to develop pollutant control programs to benefit Bay-Delta water quality (e.g., through amendments to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bay, and Estuaries of California). The evaluation of the interactions of pollutant discharges and hydromodification on fish and wildlife, drinking water, agricultural resources, etc. beneficial uses may result in a more robust analysis of the necessary coordinated water rights and pollutant control actions necessary to protect all beneficial uses.</p>	
1171	114	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 52</p> <p>SED Text, Paragraph, Sentence in Question: San Joaquin River Dissolved Oxygen Objective</p> <p>Comment: Dissolved oxygen objectives (6 mg/L) in the Stockton DWSC were developed to be barely adequate to allow salmonid passage during fall run adult migration. The studies cited in the DO TMDL suggested that there are still impediments to fish biology and behavior at 6 mg/L. Much of the literature suggests that salmonid species need a minimum of 8 mg/L DO to prevent adverse impacts. In addition, the WQO of 6 mg/L only applies to the months September to November. ESA listed species (e.g., spring-run, steelhead, and green sturgeon) migrating through the DWSC outside of this time window could be subjected to even lower levels of DO, thus the WQOs are not fully protective. Likewise, many of the waterways and possible migratory corridors in the southern Delta are listed from DO impairments. The Stockton DWSC DO TMDL determined the 3 factors that contributed to the DO impairments in the Stockton DWSC were channel geometry, nutrient and BOD inputs, and increased residence time. Flow from the LSJR is directly related to the residence time in the Stockton DWSC and the southern Delta. The SWRCB should evaluate the necessary flow to provide the required residence time and DO conditions to support all life stages and species that rely on the Stockton DWSC and other Delta waterways.</p>	<p>Amendments to the dissolved oxygen objective were not proposed as part of the plan amendments and comments regarding the dissolved oxygen objective are beyond the scope of the plan amendments. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding commenters' suggested modifications to the plan amendments, including modifications to the plan amendments and suggested modifications that were not made. Refer to the discussion of other types of water quality objectives.</p>
1171	115	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 55</p> <p>SED Text, Paragraph, Sentence in Question: Recommendations to other Agencies- Review and modify, if necessary, existing commercial and sport fishing regulations</p> <p>Comment: General comments: 1) commercial fishing was completely shut down (through regulations) during the last salmon population crash, creating immense economic impacts to commercial fishermen; however, SJR diversions were not reduced during this same time. 2) The CDFW, CF&amp;GC, PFMC, and NOAA have been and are continuing to review and modify fishing regulations.</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>
1171	116	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p>	<p>Amendments to Part C, numbers 1 through 9, of the program of implementation in SED Appendix K, Revised Water Quality Control Plan, are not proposed as plan amendments. Comments regarding Part C, numbers 1–9, are beyond the scope of the plan amendments. No further response is required.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>Page #: 55, 56, 58</p> <p>Comment: section 1, 2, 3, 4, and 8 needs updating of information and acronyms</p>	
1171	117	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 62</p> <p>SED Text, Paragraph, Sentence in Question: San Joaquin River Non-Flow Actions- ix. Reduce Predation and Competition by Non- native Fish</p> <p>Comment: As currently written, it is assumed that non-native predators are having an impact on anadromous salmonids; however, the impact is not defined. Since the impact is not defined there is currently no metric to measure any impact or "reduction" of impact. This section should be changed to evaluate what, if any, population level impact(s) non-native predators are having upon anadromous salmonids. If a population level impact is occurring, and the contributing factors have been identified, then impact reduction can be considered. In addition, the Department suggest that all studies and hypotheses that have bearing on this plan or the implementation of objectives of this plan be passed through the independent science board, as called for in earlier sections regarding changes in flow and non-flow management.</p>	<p>Please refer to Master Response 3.1, Fish Protection, for discussions of the flow needs of San Joaquin Basin salmonids, expected benefits to fish populations from the project, and consideration of predation, including discussions of recent predation studies, predation rates, and expected effects of higher flows during February through June on juvenile salmonid survival. As discussed in Master Response 3.1, reducing predator populations without addressing habitat alterations that provide non-native predators favorable conditions is unlikely to be successful for predator control. A combined effort of habitat improvement that favors native species over predator species (through implementation of a more natural flow regime) and predator reduction efforts is needed. Also refer to Master Response 5.2, Non-flow Measures, regarding consideration of non-flow measures, such as predator reduction and habitat restoration.</p>
1171	118	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 17 to 21</p> <p>SED Text, Paragraph, Sentence in Question: Table 3</p> <p>Comment: Fish and Wildlife beneficial uses (Table 3) are the only beneficial uses where flows are included as a parameter. This implies that flows are only being used to enhance fish, when in reality flows are also being used to improve all water quality parameters (e.g., EC and DO) for all beneficial uses in the LSJR and Delta. Most importantly, increased flows improve water quality for municipals and agriculture in the LSJR and Delta, as such, flows should be included as a parameter for these beneficial uses.</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>SED Appendix K, Revised Water Quality Control Plan, Tables 1, 2, and 3 contain the water quality objectives for the protection of municipal and industrial, agricultural, and fish and wildlife beneficial uses, respectively. Ancillary benefits to multiple beneficial uses may occur from objectives that target a different beneficial use.</p>
1171	119	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 36-37</p> <p>SED Text, Paragraph, Sentence in Question: "Voluntary agreements may include commitments to meet the flow requirements and to undertake non-flow actions. If the voluntary agreements include non-flow actions recommended in this Plan or by DFW, the non-flow measures may support a change in the required percent of unimpaired flow, within the range prescribed by the flow objectives, or other adaptive adjustments otherwise allowed in this program of implementation."</p>	<p>Please Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the integration of non-flow measures. Please refer to Master Response 5.2, Incorporation of Non-flow Measures, for additional information and responses to comments regarding non-flow measures.</p> <p>The plan amendments incorporate a range of non-flow actions complementary to the flow objectives for the reasonable protection of fish and wildlife in Appendix K, Revised Water Quality Control Plan. The recommended non-flow actions should be part of the overall effort to comprehensively address Delta aquatic ecosystem needs, and tributary ecosystem needs, as a whole, and can be used to inform adaptive implementation decisions in response to implementation of the plan amendments (see SED Chapter 3, Appendix K). Non-flow measures alone will not be sufficient to "support and maintain the natural production of viable native San Joaquin River Watershed fish populations migrating through the Delta"; therefore, water quality objectives based on flow are needed (Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, Sections 3.1, Introduction and 3.7,</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>Comment: Non-flow measures may be able to create the environmental conditions that can support the needs of fish and wildlife, in lieu of some additional flow. However, the efficacy of these substitutions should be measured against the attaining of biological goals, environmental goals, or other appropriate metric.</p>	<p>Importance of Flow Regime).</p> <p>Non-flow measures, which in most cases depend on sufficient flow for successful implementation, cannot substitute or be prioritized over the need for flow requirements and therefore cannot be considered alternatives to the plan amendments (please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for more information regarding the range of alternatives considered). Please refer to Master Response 5.2, Incorporation of Non-Flow Measures, for more information regarding non-flow measures; their role in the overall health of the tributaries' ecosystem; and how they relate to the plan amendments described in SED Chapter 3, Alternatives Description, Appendix K, Revised Water Quality Control Plan.</p>
1171	120	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 45-48</p> <p>SED Text, Paragraph, Sentence in Question: "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 Salt and Boron in the lower San Joaquin River...</p> <p>CVRWQCB Salt and Boron TMDL BPA (Pg 13) 1. The State Water Board should consider the continued use of its water rights authority to prohibit water transfers if the transfer contributes to low flows and related salinity water quality impairment in the lower San Joaquin River.</p> <p>2. The State Water Board should consider the continued conditioning of water rights on the attainment of existing and new water quality objectives for salinity in the lower San Joaquin River, when these objectives cannot be met through discharge controls alone."</p> <p>Comment: CVRWQCB Basin Plan and implementation programs suggest that the State Board should use their authority to improve salinity conditions. The State Board proposes in this plan amendment for the CVRWQCB to use their authority to improve salinity conditions. Both entities rely on the other to fix the conditions. A combined evaluation of the impact of salt discharges and water diversions comprehensively to determine the impacts from interactions of both alterations to the aquatic environment may help to develop a more robust regulatory program to improve salinity conditions.</p> <p>As mentioned in previous comments, many more impairments (e.g., temperature, electrical conductivity, dissolved oxygen, and pesticides) could be alleviated by increasing flow in the LSJR watershed.</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of modifications that were made to the plan amendments. Either in response to comments or to provide clarifications, Several modifications were made to section 1, Southern Delta Salinity Objectives, in part B of the program of implementation that addresses implementation measures requiring a combination of State Water Board authorities and actions by other agencies. Changes are made to four subsections (i, ii, iii, and vii) under State Regulatory Actions on pages 42-27. The text changes in subsection i provides more background on USBR's responsibility for reduced water quality on the SJR at Vernalis from operation of the Central Valley Project (CVP). Text modifications in section ii also provides more background on USBR's and DWR's responsibility for salinity problems in the southern Delta due to export pumping. It also states the State Water Board will amend USBR's and DWR's water rights to continue to require implementation of the interior southern Delta salinity water quality objective consistent with the Bay-Delta Plan. The previous language stated that USBR and DWR shall be required to comply with 1.0 dS/m as a condition of their water rights. The change was made to be clearer that the State Water Board will be amending their water rights consistent with the Bay-Delta Plan. Also included is text to make clear that the State Water Board will consider appropriate allocation of responsibility for implementing the interior SDWQ objectives, including the responsibilities of other water users, based on implementation or completion of the Comprehensive Operations Plan (COP), Monitoring Special Study, modeling, or Monitoring and Reporting Plan.</p>
1171	121	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 59</p>	<p>Please refer to response 1171-119 regarding non-flow actions.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>SED Text, Paragraph, Sentence in Question: Non-flow Actions</p> <p>Comment: The Department [CDFW] believes that both improvements in the flow regime and non-flow actions are necessary in the LSJR and tributaries to recover native species. The flow actions should be coordinated with the non-flow restoration actions to maximize the benefits to the aquatic ecosystem.</p> <p>The data suggests that non-flow actions alone will not provide the necessary habitat benefits to recover anadromous salmon populations. Likewise, it is critical that improvements to the LSJR tributaries flow regimes are coordinated with additional non-flow actions to provide water quality and habitat improvements to recover native populations.</p>	
1171	122	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 62-63</p> <p>SED Text, Paragraph, Sentence in Question: Section 10 ix.</p> <p>Comment: The Department [CDFW] suggests that all studies and hypotheses that have bearing on this plan or the implementation of objectives of this plan be passed through the independent science board, as called for in earlier sections regarding changes in flow and non-flow management.</p>	<p>Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for a discussion of the Delta Independent Science Board (ISB) in the context of the STM Working Group and the San Joaquin River Monitoring and Evaluation Program (SJRMEP).</p>
1171	123	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: 69, 70, 71</p> <p>SED Text, Paragraph, Sentence in Question: E. Other Studies conducted by agencies that may provide information relevant to future proceedings</p> <p>Comment: These 3 pages appear to be outdated and need updating of information and acronyms.</p>	<p>Amendments to part E of the program of implementation are not proposed as plan amendments and the studies listed are outside the plan area. Comments regarding part E of the program of implementation are beyond the scope of the plan amendments. No further response is required.</p>
1171	124	<p>[From ATT3:]</p> <p>SED Chapter: Appendix K</p> <p>Page #: Throughout</p> <p>SED Text, Paragraph, Sentence in Question: DFG throughout Appendix K</p> <p>Comment: DFG is now DFW.</p>	<p>The name California Department of Fish and Game and its acronym, CDFG, will be changed throughout Appendix K Revised Water Quality Control Plan, to be California Department of Fish and Wildlife and CDFW.</p>
1171	125	<p>[From ATT3:]</p> <p>SED Chapter: Throughout</p> <p>SED Text, Paragraph, Sentence in Question: Use of the term 'smoltification.' Smoltification is</p>	<p>Smoltification is a well-known term used to represent the physiological and morphological changes that prepare juvenile salmonids for ocean entry. The SED uses this term appropriately.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>not a real word.</p> <p>Comment: Recommend change to 'smolting' throughout the report.</p>	
1171	126	<p>[From ATT3:]</p> <p>SED Chapter: Throughout</p> <p>SED Text, Paragraph, Sentence in Question: Use of the term 'outmigration'.</p> <p>Comment: Change to 'emigration', a recognized ecological term for outward movement from an area.</p>	<p>Outmigration is a well-known term used to represent salmonid juveniles' movement from freshwater to the ocean during the smoltification life stage. The SED uses this term interchangeably with the term "emigration."</p>
1171	127	<p>ATT4: The development of SalSim originated from a question that the State Water Resources Control Board (State Water Board) asked of the California Department of Fish and Wildlife (Department) in a 2005 workshop to update their 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan). The question was basically : How much water is necessary to protect San Joaquin River juvenile emigrating fall-run Chinook salmon smolts? This question motivated the Department to develop a model focused on salmon production in the San Joaquin River and tributaries. Originally developed in Microsoft Excel, the model evolved over time and through responses to peer reviews to become SalSim; accessible via the internet (<a href="http://www.salsim.com">www.salsim.com</a>) and publicly released in June 2013.</p> <p>SalSim is a full lifecycle fall-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>) population simulation model for the lower San Joaquin River (SJR) and its salmon bearing tributaries, the Merced, Tuolumne and Stanislaus rivers. SalSim has two versions: an internet based version (SalSim) and a desktop version (SJRSim). SalSim contains three sub-models that include: i) water operations involving reservoir inflow, storage, and outflow (both diversion and river); ii) water temperature response as a function of reservoir storage and release temperature, ambient air temperature, and instream flow level; and iii) salmon production response, for both natural and hatchery production (including adult spawning, egg incubation, juvenile rearing and emigration, adult contribution to ocean fisheries, and adult immigration). In addition, SalSim provides the ability to predict a salmon production response using imported water temperature and flow data from external models (e.g., HEC-5Q or CALSIM), if more precise water temperature and flow estimates are necessary . SJRSim contains only the salmon production response portion listed above, and for scenarios utilizing modified flows and temperatures requires imported flow and temperature data.</p> <p>SalSim was not widely used until 2016 when the State Water Board staff utilized it to evaluate flow alternatives as part of their revised Substitute Environmental Document (SED) for Phase 1 of the Bay-Delta Plan update. Resulting from that use, the State Water Board staff informed the Department that their SalSim modeling results appeared flawed and illogical. Through investigating the State Water Board's SalSim modeling results and the mathematical functions in SalSim, the Department determined that parameter values in equations for egg, alevin, and juvenile survival, were in error. In combination these errors produced excessively high egg and alevin mortality during warmer water flow events, and juvenile survival that was not sensitive to river temperatures once flows exceeded about 450 cubic feet per second (cfs).</p>	<p>Please refer to Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, which provides a use advisory for SalSim; and specifically describes the limitations of SalSim. Please also see Master Response 3.1, Fish Protection, regarding the State Water Board's use of SalSim, and acknowledgement of model limitations.</p> <p>SJRSim is considered preliminary and was therefore not used after receiving these comments.</p>

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>In response, the Department revised the SJRSim model, correcting the parameter values for these equations so that temperature responses for all life stages were more logical and better aligned with United States Environmental Protection Agency (USEPA) temperature guidelines. In addition, the Department also modified the juvenile downstream movement function so that downstream movement is more variable, better reflecting the trend observed in empirical data derived from juvenile emigration timing and survival studies. The Department only modified SJRSim because only SJRSim provides the user access to the various parameter values without reprogramming or coding. Modification to SaiSim would require the services of an external contractor. In addition, the Department has been periodically re-calibrating the SJRSim adult return estimates utilizing the model's fry density dependent survival functions for each river, so it is the model with the most up to date calibration.</p> <p>The Department is providing this information to the State Water Board for use and consideration as it continues its Bay-Delta Plan update. Use of SJRSim, and any results, should be considered preliminary until a review of this revised desktop model has been conducted by the United States Bureau of Reclamation's SJRSim model developer. SJRSim is publicly available by request to the Department.</p>	
1171	128	ATT4: ATT1: Figure 1 SalSim Package Design	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.
1171	129	ATT4: ATT2: Figure 2 Connections between SalSim Modules	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.
1171	130	<p>SalSim Applied (aka Errors Identified)</p> <p>While SalSim was released to the public in 2013, it was not "put to the test" until 2016 when used by the State Water Board staff. In the process of being used by the State Water Board staff as part of the revised Substitute Environmental Document (SED) for Phase 1 of the Bay Delta Water Quality Control Plan update, illogical results were discovered. Through investigating the State Water Board's SalSim modeling results and the mathematical functions in SalSim, the Department [CDFW] determined that parameter values in equations for egg, alevin, and juvenile survival, were in error. In combination these errors produced excessively high egg and alevin mortality during warmer water flow events, and juvenile survival that was not sensitive to river temperatures once flows exceeded about 450 cubic feet per second.</p>	Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, provides a use advisory for SalSim and describes the limitations of SalSim. Please see Master Response 3.1, Fish Protection, regarding State Water Board use of SalSim and acknowledgement of model limitations.
1171	131	<p>ATT4: Egg and Alevin Survival</p> <p>SalSim uses the following equation to determine daily egg and alevin survival:</p> $\text{Probability(Survival)} = \text{Expit}(b(T - a))\text{Expit}(d(Q - c))$ <p>Where 'a' through 'd' are parameters relative to temperature and flow, 'T' is the temperature in degrees Celsius, and 'Q' is the flow in cubic feet per second. Table 1 [see ATT4: ATT3] shows a comparison of original parameters alongside revised parameter values.</p> <p>The graphs in Figure 3 [ATT4: ATT4]-Original and Revised Egg and Alevin Survival Functions below compare the survival probability for eggs and alevin between the original survival curves in blue and the revised parameter curves in red. The original parameters resulted in</p>	Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, provides a use advisory for SalSim and describes the limitations of SalSim. Please also see Master Response 3.1, Fish Protection, regarding State Water Board use of SalSim and acknowledgement of model limitations.

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>excessive mortality when considering multi-day survival. The revised parameters allow the functions to better reflect empirical multi-day temperature-survival relationships.</p> <p>In SalSim, eggs exposed to a constant 14°C suffer 100 percent mortality within five days (Figure 4, blue lines). The revised equations (red lines) more appropriately consider survival related to exposure (e.g., for eggs at the same 14°C exposure, mortality would be 80 percent after thirty days). Similar results are obtained with alevin, except at 15°C. Egg and alevin survival curves for 14°C and 15°C exposures, respectively, are shown in Figure 4 [see ATT4: ATT5]-Egg and Alevin Survival Curves.</p>	
1171	132	ATT4: ATT3: Table 1 Egg and Alevin Survival Parameters	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.
1171	133	ATT4: ATT4: Figure 3 Original and Revised Egg and Alevin Survival Functions	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.
1171	134	ATT4: ATT5: Figure 4 Egg and Alevin Survival Curves	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.
1171	135	<p>ATT4: Juvenile Survival</p> <p>There are two juvenile survival equations affecting juvenile salmon populations prior to entering the Delta, which are density independent and density dependent . The density independent equation considers fish length, river temperature and flow parameters and calculates juvenile survival probabilities for the fry, parr, and smolt life stages. This equation is show below:</p> <p>Density Independent:</p> $\text{Probability (Survival)} = \frac{1}{(1+\exp(-(a+bT+cQ+dL+eTQ+fTL+gQL+hL^2)))}$ <p>Table 2 [see ATT4: ATT6] shows a comparison of original parameters for the three tributary rivers alongside revised parameter values, where the original SalSim parameter values for parameters 'd' through 'f' were erroneously set to zero. These values represent our initial attempts to calibrate the model to rotary screw trap estimates, which proved nearly impossible as that data contains such wide confidence intervals. However, as we moved to utilizing adult return estimates as a calibration factor, we mistakenly left these parameters set to zero in the model equation. This oversight caused the density independent survival function to disregard temperature effects once river flows exceeded about 450 cfs. These parameters have been revised, such that they are the same for each river. Results now reflect influences from fish length and river temperature (aligning more with USEPA and literature research temperature guidelines) . Previous results were primarily driven by flow as seen in Figure 5 at a flow of 450 cfs.</p> <p>At flows around 200 cfs, the flow value does not overly drive survival estimates, and influences from temperature and fish length can be observed (e.g., comparison of Figures 5 and 6 "Original" survival estimates (red lines)). The revised survival probability curves are similar for 200 cfs and 450 cfs using the revised equations. The revised density independent equation produces results that are logical and defensible when considering juvenile salmon</p>	<p>Please refer to Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, which provides a use advisory for SalSim, and specifically describes the limitations of SalSim. Please also see Master Response 3.1, Fish Protection, regarding the State Water Board’s use of SalSim, and the acknowledgement of model limitations.</p>



**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		<p>responses to temperature, which is critical when considering benefits of increasing flows with the goal of reducing temperatures.</p> <p>In SalSim, the density dependent equation is used to generally reflect fry overcrowding and competition for limited habitat. The abundance of fry habitat, which can differ from river to river or within a river at varying flows, has not been directly measured, thus flow is used as a proxy for habitat. Further, because of this variability, we primarily used this equation to re-calibrate the model (see Re-Calibration Effort section) to adult returns by adjusting the parameters k1, k2, and k3 for each river. The density dependent equation takes the form:</p> <p>Density Dependent: [Equation]</p> <p>Where, density = [Equation]</p> <p>The parameter values and descriptions shown in Table 3 [see ATT4: ATT9] indicate our most recent effort at calibrating the SJRSim model.</p> <p>This results in the probability for fry survival for each of the tributary rivers as shown Figure 7 [see ATT4: ATT10] below.</p> <p>These parameters are justifiable, if the fry carrying capacities are such that the Merced River has greater capacity or habitat than the Tuolumne River, which has greater capacity than the Stanislaus River. If you assume that wider non-incised channels have greater potential for fry carrying capacity, then the Merced River does have greater carrying capacity. This is based on comparing the channel widths at varying flows from 500 to 3,000 cfs for the upper 20 miles of each river using data from the Department's HEC-5Q model for the San Joaquin River Basin. The Department does realize that one cannot accurately model complex habitat, fry density and flow conditions using a simplified equation, but the flow to river channel width comparison does help support these parameter values.</p>	
1171	136	ATT4: ATT6: Table 2 Juvenile Density Independent Survival Parameters	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.
1171	137	ATT4: ATT7: Figure 5 Juvenile Density Independent Survival Function at Flow of 450 cfs	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.
1171	138	ATT4: ATT8: Figure 6 Juvenile Density Independent Survival Function at Flow of 200 cfs	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.
1171	139	ATT4: ATT9: Table 3 Density Dependent Juvenile Survival Parameters	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.
1171	140	ATT4: ATT10: Figure 7 Fry Density Dependent Survival Function	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.
1171	141	<p>ATT4: Juvenile Downstream Movement</p> <p>Juvenile movements are evenly divided into one of three downstream movement classifications (aka movement cohorts), identified as one of slow, medium, or fast downstream movers. We recognize this is a simplistic way of reflecting the fact that downstream juvenile movement varies widely with some fish from a production cohort occupying specific habitat for some time, while members from the same production cohort</p>	Please see Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, which provides a use advisory for SalSim; and specifically describes the limitations of SalSim. Please also see Master Response 3.1, Fish Protection, regarding the State Water Board's use of SalSim and acknowledgement of model limitations.

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		<p>may move downstream immediately, carried away by stream velocity. We also recognize that when flood plain conditions arise, many thrive within this habitat as long as it persists, and only move downstream as the flows recede. In SalSim, the movement equation considers movement class (slow, medium, or fast), and the model looks at the river for conditions where floodplain habitat might occur. Flood plain habitat estimates are based on cross-sectional data developed by the Army Corps of Engineers for a flood capacity study following the flooding that occurred in 1997. This data is contained within the Department's San Joaquin River Basin-Wide water temperature and EC Model (Dotan et al. 2013), for roughly each mile of each river. The equation determines downstream movement in miles per day and is in the following form:</p> <p>[equation]</p> <p>The original and revised parameter values are shown in Table 4. [see ATT4: ATT11]</p> <p>The movement equation with the parameters identified in Table 4 produces the movement curves for the fast, medium, and slow downstream moving juveniles as shown in Figure 8. The dashed lines indicate the much less variable original movement curves used in SalSim. The revised equation, we believe, represents a more realistic approach that encompasses a broader range of movement among the juveniles, without having empirical data that would indicate a different movement pattern. The peak occurring in each curve around 3,000 cfs is the result of floodplain inundation for a specific river at a specific location, and is a result of when floodplain conditions begin to affect the juveniles' downstream movement.</p>	
1171	142	ATT4: ATT11: Table 4 Juvenile Downstream Movement Parameters	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.
1171	143	<p>ATT4: Re-Calibration Effort</p> <p>The Department's [CDFW's] initial re-calibration effort was done using the desktop version of the model, SJRSim. This version of the model was developed by AD Consultants (part of the original SalSim development team) for the United States Bureau of Reclamation and its work with the San Joaquin River Restoration Program. SJRSim provides access to many of the model's parameters to allow manipulation of equations to conduct "what if" analyses for comparing juvenile survival relative to habitat, since the upper San Joaquin River does not have a recurring population to establish calibration. Having access to the various parameters allowed the Department to use this model in its initial re-calibration effort. We maintained the same parameter values for all three tributaries (Stanislaus, Tuolumne, and Merced rivers) for egg and alevin survival and juvenile density independent survival, as previously discussed, as these equations are primarily temperature driven. We also kept the movement equation parameters the same for the three rivers, assuming juvenile responses to flow velocity and floodplain conditions to be the same within all three tributaries. We then used the fry density dependent survival equation to vary parameters independently for each river, since this equation considers population and habitat availability in terms of fry density. This is a logical approach given that habitat availability can vary from river to river or within a river due to varying flows.</p> <p>The following figures [see ATT4: ATT13, 14, 15, &amp; 16] show the re-calibrated SJRSim results for each of the three tributary rivers and a total for all rivers. The graphs on the left show the correlation results and include the R-squared regression value that simply provides a "goodness of fit" between historical and simulated data, where a "1" value would indicate</p>	<p>Please refer to Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, which provides a use advisory for SalSim; and specifically describes the limitations of SalSim. Please also see Master Response 3.1, Fish Protection, regarding the State Water Board's use of SalSim and acknowledgement of model limitations.</p> <p>SJRSim is considered preliminary and was therefore not used in the SED's analysis.</p>

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		<p>that the dependent variable (modeled results) matches exactly the independent variable (empirical escapement estimates) and a zero means there would be no correlation between historical and simulated results. The graphs on the right show comparisons between the historical and simulated adult salmon escapements. It is possible that additional calibration efforts could improve these results.</p> <p>For the Merced River (Figure 9 [see ATT4: ATT13], with the correlation graph on the left and the historical versus simulated results in the graph on the right)</p> <p>For the Tuolumne River (Figure 10 [see ATT4: ATT14], with the correlation graph on the left and the historical versus simulated results in the graph on the right):</p> <p>For the Stanislaus River (Figure 11 [see ATT4: ATT15], with the correlation graph on the left and the historical versus simulated results in the graph on the right):</p> <p>For all tributaries combined (Figure 12 [see ATT4: ATT16], with the correlation graph on the left and the historical versus simulated results in the graph on the right) :</p> <p>The SJRSim's 1998 adult Chinook salmon decline is anomalous at this point, and without further evaluation is unexplainable. Otherwise, the re-calibration results for all tributaries, as shown in Figure 12, provides a reasonable "fit" to historical adult returns.</p>	
1171	144	ATT4: ATT12: Figure 8 Juvenile Downstream Movement Function	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.
1171	145	ATT4: ATT13: Figure 9 Merced River Re-Calibration (SJRSim)	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.
1171	146	ATT4: ATT14: Figure 10 Tuolumne River Re-Calibration (SJRSim)	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.
1171	147	ATT4: ATT15: Figure 11 Stanislaus River Re-Calibration (SJRSim)	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.
1171	148	ATT4: ATT16: Figure 12 All Rivers Re-Calibration (SJRSim)	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.
1171	149	<p>ATT4: The Department [CDFW] has revised SJRSim to be the most up to date model, until the internet based interactive SalSim can be updated. As a result, the revised desktop SJRSim no longer has the ability to conduct flow simulations internally. All scenarios either utilize the calibrated HEC-SQ flow and temperature data (which reside within the model) or require flow and temperature data to be imported for alternative scenarios. SalSim also provided graphical and animated outputs that are no longer available with the desktop version. SalSim provided a button to click on to download model output, but the desktop version provides this feature only by clicking on desired output files; however, all output files are automatically saved by SJRSim to the user's hard drive after each run, and files are overwritten unless different scenarios have a different run name. Since SJRSim's developer (AD Consultants) was not available to assist with the</p> <p>recent SJRSim refinement, any model simulation results from the new desktop version of SJRSim should be viewed as preliminary.</p>	<p>Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, provides a use advisory for SalSim and describes the limitations of SalSim. Please see Master Response 3.1, Fish Protection, regarding State Water Board use of SalSim and acknowledgement of model limitations.</p> <p>SJRSim is considered preliminary and was not used after receiving these comments.</p>

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1172	1	<p>The Draft SED analysis shows an average reduction of 137 TAF in supplies to San Francisco's regional system during a repeat of the 1987 to 1992 drought. Based on SFPUC's predicted future demand of 297 TAF, this would constitute a 46% shortage in supply. SFPUC's most recent analysis shows annual impacts as high as 54% shortages during a similar extended drought scenario (refer to SFPUC's March 17, 2017 comments on the Draft SED for details on their recent analysis). The Draft SED does not adequately analyze the impacts of this reduction. This level of reduction could significantly impact the ability of the [Santa Clara Valley Water] District to provide reliable water supplies to our communities, businesses, and local streams, and make it more difficult for us to protect our local groundwater basins and prevent land surface subsidence.</p> <p>The Draft SED analysis asserts that there will not be a supply impact because San Francisco will be able to secure transfer supplies to make up the difference. Based on our experience, the District and SFPUC will be hard pressed to find the volume of transfer supplies that the Draft SED envisions. In dry years, demand exceeds available transfer supplies, and sellers face political and environmental pressures to abstain from transferring water outside of their region. Implementation of the proposed Phase 1 reductions in supply will exacerbate this situation, increasing the demand on limited water supplies. In years when transfer supplies are more plentiful, conveyance capacity across the Delta can be limited; in 2016, there was no conveyance capacity for new transfers of non-SWP/CVP water. Conveyance losses are also high; as much as 35% of purchased water can be lost in transit. The economic and environmental impacts of this supply reduction to Santa Clara County need to be fully and adequately analyzed in order for the State Water Board to make an informed decision that properly balances all beneficial uses.</p>	<p>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> <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. Please also see Master Response 8.5 regarding groundwater use.</p> <p>Please 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> <p>Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the overall approach to modeling and the treatment of municipalities. Please also see Master response 8.5 regarding the State Water Board modeling approach specifically related to SFPUC and the RWS service area and regarding SFPUC's analysis regarding water supply shortages.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the consideration of beneficial uses.</p>
1172	2	<p>There is no debate that fish need water, but the State Water Board must consider the importance of timing, quantity, location, and quality of water releases in the context of all the stressors on the species in order to identify effective solutions. Given the potential impacts of proposed flow modifications, these solutions must utilize the best available science to craft approaches that recognize and respond to competing needs. In many cases, strategic actions can be implemented to provide the functions that historic flows provided with minimal water costs. An example is the recent North Delta Food Web Adaptive Management Project that was implemented in 2016 as part of the California Natural Resources Agency's Delta Smelt Resiliency Strategy.</p> <p>Unimpaired flows do not have the same form and function as natural flows in our highly altered system. Native fish evolved under natural flow conditions, not unimpaired flow conditions. Under natural or historic flows, water would spill out of the rivers into vast floodplains and wetlands where native fish would spawn and rear. The water that was not taken up by vegetation would then slowly drain back into the rivers, carrying with it the fish and large amounts of food material.</p> <p>Today's unimpaired flows travel down channelized river systems, disconnected from the landscape except in extreme flood events. In fact, recent studies have calculated that Delta inflows and outflows under historic conditions were significantly less than unimpaired flows. [Footnote 1: Huang, G. (2016). Estimates of Natural and Unimpaired Flows for the Central Valley of California: Water Years 1922-2014, California Department of Water Resources, Bay-Delta Office, March, Draft Fox, P., Hutton, P.H., Howes, D.J., Draper, A.J., and Sears, L. (2015). Reconstructing the Natural Hydrology of the San Francisco Bay-Delta Watershed,</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 refer to Master Response 3.1, Fish Protection, regarding why more flow is needed, and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the adequacy of the range of alternatives. Please also see Master Response 2.1, Amendments to the Water Quality Control Objectives, for the policy justifications for the plan amendments.</p>

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		<p>Hydrology and Earth System Sciences, 19, 4257- 4274.]</p> <p>We cannot restore the conditions under which native fish evolved simply by adding more water to the existing rivers and Delta channels.</p>	
1172	3	<p>The State Water Board should embrace a more collaborative process to develop water quality objectives that restore the functions that historic flows provided through a combination of flow and non-flow actions. To that end, we urge the State Water Board to support, and allow sufficient time to develop the agreements that are being negotiated under Governor Jerry Brown's direction.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments by the State Water Board supporting voluntary agreements. As described in the Executive Summary, the State Water Board consulted with public agencies and the public on the update of the Bay-Delta Plan. Please see Master Response 1.1 and Master Response 1.2, Water Quality Control Planning Processing, for additional information on the State Water Boards' collaborative and consultation efforts.</p>
1172	4	<p>[From ATT1:] As the primary water resource management agency for Santa Clara County, the Santa Clara Valley Water District (District) is concerned about potential impacts to water supply reliability as a result of the State Water Board's preferred alternative in the 2016 Bay-Delta Plan Amendment and Revised Draft Substitute Environmental Document (Draft SED). The San Francisco Public Utilities Commission (SFPUC) conducted its own analysis of impacts and predicts annual supply shortages as high as 54% [Footnote 1: Refer to SFPUC's March 17, 2017 comments on the Draft SED for their predicted annual shortages under the proposed 40% UF scenario.] for its Regional Water System (RWS). The District's own analysis, based on SFPUC's analysis, predicts that Santa Clara County SFPUC wholesale customers could face shortages of up to 73%.</p> <p>The Draft SED does not adequately analyze the impacts of this reduction. This level of reduction could significantly impact the ability of the District to provide reliable water supplies to our communities, businesses, and local streams, and make it more difficult for us to protect our local groundwater basins and prevent land surface subsidence.</p> <p>In order to manage these shortages, SFPUC wholesale customers in Santa Clara County will almost certainly rely on District managed supplies including groundwater, local surface water, and District supplies imported through the State Water Project (SWP) and Central Valley Project (CVP). That shift in reliance for drought supplies will (a) cause an increase in the frequency and magnitude of mandatory county wide demand reductions and/or (b) require the District to add additional supply resources, requiring additional expenditures on behalf of County ratepayers and having various environmental impacts.</p> <p>Based on modeling using 94 years [Footnote 2: 1922 to 2015] of hydrologic data, the District predicts the preferred alternative will double the number of years that fall into the "Alert Stage" under the District's Water Shortage Contingency Plan (WSCP) and increase the number of years in the "Critical Stage" from zero to four (over 94 years), resulting potentially in calls for county-wide demand reductions of up to 40% in those years.</p>	<p>Please see response to Comment 1172-1.</p>
1172	5	<p>[ATT1:ATT1: Figure 1: Graph of Historic Groundwater Conditions in Santa Clara County.]</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>
1172	6	<p>[ATT1:ATT2: Table 1: Water Shortage Contingency Plan Stages.]</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>
1172	7	<p>[From ATT1:] The preferred alternative in the Draft SED would establish an adaptively managed flow requirement on the Tuolumne River that would start at 40% of unimpaired flow (UF). The Draft SED includes an analysis of how this could impact SFPUC water</p>	<p>Please see response to comment 1172-1.</p>

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		<p>reliability in Appendix L. Under Scenario 2, the Draft SED predicts an average RWS [Regional Water System] shortage of 137 thousand acre-feet (TAF) during each year of a repeat of the 1987-1992 drought. Based on SFPUC's predicted future demand of 297 TAF, this would constitute a 46% shortage in supply. SFPUC's most recent analysis shows annual impacts as high as 54% shortages during a similar extended drought scenario. [Footnote 3: Refer to SFPUC's March 17, 2017 comments on the Draft SED for their predicted annual shortages under the proposed 40% UF scenario.]</p> <p>The Draft SED analysis asserts that there will not be a supply impact due to these predicted shortages because San Francisco will be able to secure transfer supplies to make up the difference. Based on our experience, the District and SFPUC will be hard pressed to find the volume of transfer supplies that the Draft SED envisions. In dry years, demand exceeds available transfer supplies, and sellers face political and environmental pressures to abstain from transferring water outside of their region. Implementation of the proposed Phase 1 reductions in supply will exacerbate this situation, increasing the demand on limited water supplies. In years when transfer supplies are more plentiful, conveyance capacity across the Delta can be limited; in 2016, there was no conveyance capacity for new transfers of non-SWP/CVP water. Conveyance losses are also high; as much as 35% of purchased water can be lost in transit.</p>	
1172	8	<p>[From ATT1:] Analysis of Single-Year Effects to SFPUC's Santa Clara County Wholesale Customers.</p> <p>Determining how system-wide shortages of up to 54% to the RWS [Regional Water System] could affect Santa Clara County requires understanding how these system-wide shortages would impact the Santa Clara County SFPUC wholesale customers, our common customers, and how those customers will respond. The Water Shortage Allocation Plan, agreed to by SFPUC and its wholesale customers, is used to determine how shortages will be allocated amongst all SFPUC customers. Generally, the Water Shortage Allocation Plan provides greater reliability to retail customers than to wholesale customers such that a 20% system-wide shortage translates to a greater reduction to wholesale customers.</p> <p>Based on the Water Shortage Allocation Plan, the [Santa Clara Valley Water] District's 2015 Urban Water Management Plan determined the expected water deliveries to the District's and SFPUC's common customers under different shortage scenarios. The Urban Water Management Plan only analyzed a maximum system-wide shortage of 20% because the Water Shortage Allocation Plan only includes specific rules for system-wide shortages of up to 20%. Under the Water Shortage Allocation Plan, if SFPUC determines that a system-wide shortage would be greater than 20%, then SFPUC and the wholesale customers would meet to discuss how to allocate further supply reductions.</p> <p>Another relevant reference in the context of this analysis is the Bay-Delta Plan--in particular, the 2016 amendment to it. To analyze the larger-than-20% system-wide reductions expected under the preferred alternative in the 2016 Bay-Delta Plan Amendment, the District assumed that wholesale supply reductions would be prorated based on the wholesale reductions at a system-wide shortage of 20%. A summary of the District's analysis comparing supply reductions between the RWS, all SFPUC wholesale customers, and SFPUC wholesale customers in Santa Clara County can be found in Table 2 [ATT1:ATT3].</p> <p>The results shown in Table 2 have significant implications for the District. While SFPUC is predicting up to a 54% system-wide shortage under the 40% UF requirement, this could</p>	Please see response to Comment 1172-1.

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		<p>translate into as much as a 73% shortage for its wholesale customers in Santa Clara County. To compensate for these shortages, SFPUC wholesale customers in Santa Clara County will almost certainly rely on District managed supplies including groundwater, local surface water, and District supplies imported through the SWP and CVP.</p>	
1172	9	<p>[ATT1:ATT3: Table 2: Calculations showing how system wide shortages to the RWS {Regional Water System} could impact the projected supply to all SFPUC's wholesale customers and to the specific subset of those customers in Santa Clara County.]</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>
1172	10	<p>[From ATT1:] Analysis of Long Term Effects to Santa Clara County Supply Reliability.</p> <p>[Santa Clara Valley Water] District staff analyzed how shortages to the Santa Clara County SFPUC wholesale customers would affect the entire District service network using the Water Evaluation And Planning (WEAP) system model. The WEAP model is used primarily to simulate the District's water supply system comprised of facilities to recharge the county's groundwater subbasins, local water supply systems including the operation of reservoirs and creeks, treatment and distribution facilities, and raw water conveyance systems. The model also accounts for non-District sources and distribution of water in the county such as supplies from the SFPUC, recycled water, and local water developed by other agencies such as San Jose Water Company. In essence, the model was formulated to simulate the management of the current and future water resources within the county.</p> <p>For this analysis, District staff started with the model upon which the 2015 Urban Water Management Plan was developed and then applied the annual shortages predicted by SFPUC under the 40% UF requirement. The model analysis produces the frequency and magnitude of demand reductions mandated by the District's Water Shortage Contingency Plan, which are more severe when applying the 40% UF requirement. The WEAP results in Table 3 [ATT1:ATT4] show that the 40% UF requirement doubles the number of years under Stage 2, Alert Stage, and increases the number of years under Stage 4, Critical Stage, from 0 to 4 over a 94 year period.</p> <p>Furthermore, the WEAP model indicates that 3 of those Critical Stage years would occur during a repeat of the 1987-1 992 drought, meaning that county residents and businesses could be required to reduce demand by up to 40% in consecutive drought years. A Critical Stage demand reduction of up to 40% will have a significant financial cost to the county. Under a water shortage scenario, District expenses increase as a result of actions to augment water supply and reduce use. For instance, the District began to incur extraordinary costs as a result of actions taken in response to the 2012 to 2016 drought. As of May 2016, \$44.5M had been budgeted or spent on drought related activities. Water charges had to be increased to cover these costs.</p> <p>There is also a significant cost of shortages to residents and businesses in Santa Clara County. In 2012 the District commissioned the Brattle Group to calculate economic losses to Santa Clara County under different shortage scenarios. The largest demand reduction they calculated was a 20% reduction and that resulted in a total economic loss to the county of about \$69 million per year. A 30 to 40% demand reduction would result in a much larger loss.</p> <p>An additional concern is that the WEAP results show unmet demands to some of the Santa Clara SFPUC wholesale customers. Even under a county-wide demand reduction of 30%, these unmet demands amount to around 4 TAF due to these customers' potential inability</p>	<p>Please see response to comment 1172-1.</p>

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		to obtain sufficient supplies due to physical system constraints; these constraints could be ameliorated by construction of additional local distribution facilities, potentially including new groundwater wells.	
1172	11	[ATT1:ATT4: Table 3: WEAP results showing how the proposed 40% UF requirements could impact the frequency and magnitude of mandated demand reductions in Santa Clara County. Results are based on the 94-year hydrologic record from 1922-2015 and 2040 demands as described in the District's 2015 Urban Water Management Plan.]	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.
1173	1	The proposed WQCP amendments do not appear to decrease reliance on the Delta. This is contrary to the 2009 Delta-Reform Act ("DRA"), Water Code sections 85000, et seq., which states that it is California policy to "reduce reliance on the Delta in meeting California's future water supply needs." (Wat. Code, § 85021; see also Ruling on Submitted Matter, JCCP No. 4758 (May 28, 2016), pp. 39-41 [affirming that policies that reduce Delta reliance are consistent with the DRA's mandate to increase water reliability].) In fact, relaxation of the southern Delta salinity objective could facilitate the approval and construction of the Delta Tunnels project, which would substantially increase Delta reliance, contravening the DRA.	Please see Master Response 1.1, General Comments, regarding the Delta Reform Act and the California WaterFix Project. Master Response 3.3, Southern Delta Water Quality, addresses comments regarding SDWQ objectives in the southern Delta.
1173	2	<p>The Plan amendments' proposed relaxation of the South Delta Salinity Objective would be detrimental to water users and was not adequately reviewed in the SED.</p> <p>Relaxing the South Delta Salinity Objective is likely to impair agricultural uses in the South Delta area and is contrary to the public interest. LAND [Local Agencies of the North Delta] is a Protestant in the Hearing Proceedings Regarding Petition Filed by the Department of Water Resources and U.S. Bureau of Reclamation Requesting Changes in Water Rights for the California WaterFix Project. As part of those proceedings LAND presented expert witness testimony in conjunction with other Delta water users explaining water rights injuries related to increased salinity levels.</p> <p>Attached herewith as Exhibit A [ATT1] are the testimony and presentations on salinity provided by each of those witnesses. These exhibits describe the mechanisms and effects on agriculture of applying water with increased salinity levels in the north Delta, which is also relevant to conditions in the South Delta. LAND opposes the proposed relaxation of the South Delta Salinity Objective, which would impair agricultural productivity in the Delta. (SED, p. 18-2 [preferred alternative would increase the annual South Delta salinity objective to 1.0 dS/m].) We believe the SED: (1) provides an incomplete description of baseline salinity conditions, (2) lacks sufficient technical justification for this increase, (3) was not subject to adequate peer review on salinity impacts, and (4) inadequately describes indirect impacts.</p>	Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding the amendments to the southern Delta Salinity objective to protect agricultural beneficial uses. Please see Appendix E, Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta, for discussion of crops salt tolerance and why agriculture will be protected with a salinity objective of 1.0 dS/m. Also, please see responses to comment 1173-3, 1173-4, 1173-5, 1173-6, and 1173-7.
1173	3	<p>The SED's Description of Baseline Salinity Conditions is Inadequate.</p> <p>The SED fails to accurately describe the baseline conditions in the Bay-Delta, rendering it inadequate as an informational document. Before a project's impacts can be assessed and mitigation measures considered, a CEQA review document must describe the existing environment. (Cal. Code. Regs., tit. 14 ("CEQA Guidelines"), § 15063, subd. (d)(2).) "This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (CEQA Guidelines, § 15125, subd. (a).)</p> <p>Though the lead agency does have some discretion to omit an analysis of a project on the</p>	<p>The SED adequately describes baseline salinity conditions. As noted in the comment, Chapter 5, Surface Hydrology and Water Quality, describes existing conditions in the southern Delta, including the temporary barriers and their purpose. Please see Master Response 2.5, Baseline and No Project, for information regarding the establishment of baseline as it relates to the salinity objectives, including an assessment of intermittent exceedances of the salinity objectives, and the No Project Alternative. Appendix F.2, Evaluation of Historical Flow and Salinity Measurements of the Lower San Joaquin River and Southern Delta, provides information about measured flow and salinity patterns along the Lower San Joaquin River and in the southern Delta. The temporary barrier program contributed to circumstances under which data representing existing conditions were measured.</p> <p>As described in Appendix K, Revised Water Quality Control Plan, and in Master Response 2.1, Amendments</p>



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		<p>existing environmental conditions, "the agency must justify its decision by showing that an existing conditions analysis would be misleading or without informational value." (Neighbors for Smart Rail v. Exposition Metro Line Construction Authority (2013) 57 Cal. 4th 439, 457.) The SED fails to either use the existing environmental setting or justify the failure to do so.</p> <p>The SED's environmental setting section for hydrology discusses the history of compliance with the South Delta salinity objective (SED, p. 5-46-49), but fails to disclose that the Board regularly relaxes the existing salinity objective, and does not treat salinity exceedances that occur afterward as violations. [Footnote 2: See State Water Resources Control Board, Temporary Urgency Change Petitions--Orders, <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/">http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/</a>.] Nor does the baseline discussion reveal that temporary salinity barriers are currently used to help avoid additional violations of the salinity objective. [Footnote 3: See Department of Water Resources, Temporary Barrier Program Information, <a href="http://baydeltaoffice.water.ca.gov/sdb/tbp/web_pg/tempbar.cfm">http://baydeltaoffice.water.ca.gov/sdb/tbp/web_pg/tempbar.cfm</a>; Alexander, State Building Rock Barrier to Protect Delta from Salt Water (May 9, 2015), <a href="http://www.sfgate.com/drought/article/State-building-40M-emergency-rock-barrier-to-6252075.php">http://www.sfgate.com/drought/article/State-building-40M-emergency-rock-barrier-to-6252075.php</a> ("This is one of the last tools we have available to manage salinity.").]</p> <p>Instead the SED includes these measures in Alternative 1, the No Project Alternative. (SED, p. 18-2.) These salinity conditions, and the physical barriers used to manage them, are part of the existing environmental setting; the failure to disclose these conditions renders the SED informationally deficient. (CEQA Guidelines, § 15125.) In addition, by conflating the baseline conditions with the No Project Alternative, the SED has unduly restrained the range of alternatives considered by the SED. (CEQA Guidelines, § 15126.6.)</p>	<p>to the Water Quality Control Plan, the program of implementation provides for the continued use of temporary agricultural barriers or other reasonable measures to address salinity conditions. The comment cites in part to an emergency barrier installed in 2015 after four years of drought to help maintain water quality in the Delta. This emergency barrier was not included in the SED baseline because the baseline was established earlier, in 2009. As an emergency action, such barriers are not routinely installed.</p> <p>Chapter 3, Alternatives Description, describes the southern Delta water quality objectives. Please see Master Response 1.1, General Comments, for additional information regarding development of the salinity objective alternatives and how the SED appropriately considers a reasonable range of alternatives that will feasibly attain all or most of the project objectives.</p>
1173	4	<p>The SED Does Not Provide Adequate Technical Justification for Relaxing the Salinity Objective.</p> <p>The primary motivation for increasing the salinity to 1.0 dS/m appears to reduce the number of violations that will occur. (SED, Table 18-4.) The SED notes that in the interior southern Delta, salinity values exceeded the current 0.7 dS/m standard that applies between April and August in up to 30 percent of recorded years. (SED, p. 5-46.) It also explains that relaxing the standard so that the standard is 1.0 dS/m year-round would reduce the number of violations in the interior southern Delta. (SED, p. 18-17.)</p> <p>The SED does not, however, provide a technical explanation for the decision to relax the salinity standard. Instead, the Board appears to be attempting to cure the deficiencies in properly managing water quality in the South Delta by simply lowering the standard against which compliance is measured. The more beneficial response would be for the Board to respond to this data by reassessing its practices so that water quality can be improved, or at least brought into compliance with the current, more protective standards.</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding why the southern Delta Salinity objectives are being updated. Furthermore, please see Appendix E, Salt Tolerance of Crops in the Southern Sacramento - San Joaquin Delta, for discussion of why the salinity standard is protective of agriculture.</p>
1173	5	<p>The SED's Discussion of Impacts to Water Quality Due to Salinity Was Not Adequately Peer Reviewed.</p> <p>Though the SED purports to have undergone full peer review (SED, p. 4-23), a review of Appendix C reveals otherwise. Four of the five experts to whom the SED was submitted for review declined to review the sections addressing water quality degradation due to salinity changes, and related agricultural impacts analysis generated by Dr. Hoffman, because the</p>	<p>Please See Master Response 3.3, Southern Delta Water Quality, for discussion of the Hoffman Report peer review, peer review requirements, and the adequacy of the peer review. Appendix E, Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta, contains the final Hoffman Report issued January 2010.</p>

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Ltr#	Cmt#	Comment	Response
		<p>topics were not within their area of expertise. [Footnote 4: See generally, Appendix C Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, Attachment 1 Peer Review Comments (John Dracup, Ph.D., P.E. ["Since the water quality and salinity is not my area of interest, I am not going to comment on or answer items 7, 8 and 9 of Appendix 2."]; Dr. Julian D. Oldern ["No response is provided because the topic is outside my realm of expertise."]; Dr. Thomas Quinn [Topics 7, 8, and 9 are "simply not within my ken."].) Dr. Henriette Jager's review omitted any reference to these topics whatsoever.]</p> <p>Thus, the peer review comments fail to provide an assessment of water quality degradation related to salinity change and the Hoffman report, and do not constitute an adequate peer review of Hoffman's work and are not best available science. (See, e.g., Cal. Code Regs., tit. 15, § 5001, subd. (f) &amp; Appendix 1A [defining best available science].)</p>	
1173	6	<p>The SED's discussion of indirect impacts is inadequate. CEQA requires that environmental review of a project's impacts include indirect and secondary impacts in addition to direct impacts. (CEQA Guidelines, § 15358, subd. (a).) SED Tables 18-6 and 18-7 summarize the significance of impacts due to indirect actions and non-flow measures, but neither these tables nor the SED actually describe any of these indirect impacts.</p>	<p>SED Volume I, Chapter 4, Introduction to Analysis, states that the State Water Board's adoption of amendments to the 2006 Bay-Delta Plan will not result in direct physical changes in the environment. Rather, it is through the implementation of the Bay-Delta Plan that physical changes in the environment potentially may occur. Accordingly, all potential environmental effects evaluated in this SED are indirect effects associated with implementation, which would occur later in time. Volume 1, Chapter 18, Summary of Impacts and Comparison of Alternatives, is a summary of the impact determinations that can be found in all preceding chapters. The purpose of Chapter 18 is to summarize these impacts in a single location for readers to easily refer to, but the description and analyses of environmental impacts are contained in Volume 1, Chapters 5 through 17. Where necessary, Chapter 18 makes reference to specific chapters that disclose and discuss impacts that have been identified as significant and unavoidable.</p> <p>Please see Master Response 1.1, General Comments, for information regarding the program-level analysis and compliance with CEQA.</p>
1173	7	<p>It appears that the SED has not considered the reasonably foreseeable possibility that relaxing the salinity standard could facilitate the construction of the Delta Tunnels project by removing a standard that would otherwise limit the amount of water diverted from any new North Delta diversions. If DWR and the Bureau of Reclamation do not have to comply with a 0.7 dS/m salinity standard in the southern Delta, they have additional leeway to pump more water out of the Delta at the proposed Delta Tunnels northern pump sites. Construction of the Delta Tunnels project would cause immense indirect impacts, including impacts due to salinity changes. (See generally, Exhibit A [ATT1].) The SED is therefore informationally deficient; a complete SED must contain descriptions of all direct and indirect impacts.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments regarding the California WaterFix and for information about the program-level analysis and compliance with CEQA.</p>
1173	8	<p>The deficiencies of the Plan amendments and the SED are part of a pattern of problems with ICF International's Work.</p> <p>LAND [Local Agencies of the North Delta] continues to be concerned about the role of ICF International in the preparation of both the WQCP and the SED, as well as the environmental documents for the Delta Tunnels project. ICF has recently taken a scientifically unsupported advocacy position on the salinity levels in the south Delta while simultaneously purporting to act as an objective evaluator of Delta salinity levels for the SED. [Footnote 5: See January 20, 2017 Letter from South Delta Water Agency re: Water Quality Control Plan, available at: <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_">http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_</a></p>	<p>There is no support for this comment. In accordance with CEQA, the State Water Board may hire a consultant to prepare the SED, including a consultant who has other clients involving Delta issues, as long as the document reflects the independent judgment of the Board. (Cal. Code Regs., tit. 14, § 15084, subd. (e).) The same principle can be applied to other technical analyses supporting the Bay-Delta Plan update. The State Water Board has appropriately directed ICF's work in this proceeding and the SED reflects the State Water Board's objective and independent judgment.</p> <p>See Master Response 1.1, General Comments, for responses to general comments about the adequacy of the SED.</p>

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		<p>waterfix/docs/petitions/2017jan/20170120_sdwa_wqcp.pdf; see also January 28, 2104 Letter from South Delta Water Agency re: Resolution to Add Funds to Contract with ICF (discussing ICF’s conflict of interest in preparing the EIR for the Bay-Delta Conservation Plan while also drafting Phase I of the SED, which proposed relaxation of the south Delta salinity objective).]</p> <p>ICF not only suffers from a conflict of interest on this issue, it has generated an SED that does not satisfy CEQA’s requirements. New consulting staff without any direct conflicts should be brought onto the project to provide credible analysis to provide an unbiased and complete analysis to fully inform the public.</p>	
1173	9	The WQCP amendments and its SED are fundamentally defective and must be revised and recirculated in order to promote adequate water standards and comply with CEQA.	Please see Master Response 1.1, General Comments, for information regarding compliance with CEQA. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 3.1, Fish Protection, regarding evidence for the plan amendments. Master Response 1.2, Water Quality Control Planning Process, provides information about the regulatory framework for amending the Bay-Delta Plan
1173	10	[ATT1: Exhibit A: Selected Islands Inc., et al.’s CWF Case in Chief exhibits.]	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.
1173	11	[ATT1:ATT1: II-2-Revised. Stanley Grant testimony.]	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.
1173	12	[ATT1:ATT2: II-3-Revised. Slide presentation, "Delta Crops & Saltwater Intrusion with Twin Tunnel Operation."]	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.
1173	13	[ATT1:ATT3: II-13. Michelle Leinfelder-Miles testimony.]	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.
1173	14	[ATT1:ATT4: II-14. Michelle Leinfelder-Miles slide presentation, "The Effects of Water Quality on Soil Salinity and Leaching Fractions in the Delta."]	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.
1173	15	[ATT1:ATT5: II-24-Revised. Erik Ringelberg testimony.]	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.
1173	16	[ATT1:ATT6: II-25. Erik Ringelberg slide presentation, "Delta Salinity Responses: Project Implications to Flows and Salinity."]	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.
1174	1	I am not a radical and I understand the farmers need water to farm and the world needs the food they produce. However, we need to put in place responsible limits so we do not destroy our beautiful natural environment for profit. As an American, a Californian, a father, and a human being, I ask that the board do its’ duty to protect what nature man has not yet destroyed by his shortsightedness. Limits put in to save the Salmon and the Delta Smelt are not only good for the environment they are good for the future prosperity of our state.	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.
1174	2	I fully support the mandate of leaving 60% UF of the water in the rivers so the fish have some chance of surviving and thriving. I also support possibly increasing that amount if in a few years that amount proves inadequate.	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.
1174	3	I know that farmers planted in almonds, in particular, will suffer with less water and may have to grow less almonds or perhaps switch to less water intensive crops. The farmers historically have been able to survive growing other crops and it is only in the last ten or so	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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		years that they have become so reliant on almonds doubling their yield from 1 billion pounds to 2 billion pounds between 2004 and 2013 according to <a href="http://www.npr.org/sections/thesalt/2014/08/21/342167846/california-drought-has-wild-salmon-competing-with-almonds-for-water">http://www.npr.org/sections/thesalt/2014/08/21/342167846/california-drought-has-wild-salmon-competing-with-almonds-for-water</a> (last visited 3/16/17) (“NPR”).	
1174	4	The Delta is starving for fresh water. It is not something that is up for debate. It is proven. How we understand that not enough fresh water is coming into the Delta is by how much salinity is in the Delta region. The levels of this salt water intrusion we’ve seen in the last 50 years have only been seen 3 times in the previous 1600 years according to the fresh water report (attached [Attach 1]) from the bay institute. There is some debate about salinity levels , however, it is beyond question that the Delta is naturally a freshwater environment. Only after the advent of large-scale diversions did salinity begin intruding into the Delta. [2nd related attachment [Attach 2] contra costa water district salinity report ]. This sort of environmental degradation not only affects the fish, it affects the entire ecosystem. It prevents the native plants from growing, and allows non-native/ invasive species into these wetlands. According to the NPR report on average less than 50% of the water is allowed flow out to the bay and during drought years it is less than 35%.	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.
1174	5	No one knows what the future will hold, but until we have a future where salmon can live on land we need to give them their water back. At least the 60% UF in the Merced, Stanislaus, Tuolumne, and lower San Joaquin Rivers so they have a fighting chance. When our children or grandchildren ask what was the biggest struggle of our generation do we want to say it was stopping the large business interests from destroying our ecosystems or would we rather say that we never struggled for anything but making sure China got enough California almonds.	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.
1174	6	There is a lot of science that strongly supports allowing as close to natural flow as possible. In a perfect world perhaps that would be possible, but in a world where human beings are ever growing in population and consumption we know we can’t go completely back to nature. What we can do is impose smart limits that hopefully are enough to allow nature to rebound, and agriculture to co-exist. We only have one chance to get this right and our window time to correct our errors in overly-taxing our water supply in California is running short. Lack of action is a choice, and if we don’t act soon we risk losing this habitat and these amazing fish forever.	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.
1174	7	Asking for 80-90% flows into the Delta is not reasonable for a number of reasons. It would completely devastate farming in the Central Valley and cost millions of dollars to our economy. I am all for sacrifice but not of the scale that will destroy lives and cripple our entire economy. If we allow 60% flow there would still be enough water for farmers to grow some almonds, perhaps not 2 billion tons a year. The farmers obviously will have options to grow other crops such as melons.  This next chart sourced from <a href="http://www.takepart.com">www.takepart.com</a> (lat visited 3/16/17) shows how much water per acre foot various crops use. You see almonds take twenty-six times as much water as any of potato, tomato, sunflower, sugar beet, beans, onions, and garlic.]	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.
1174	8	Attachment 3: Graph of Water use per crops.	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.
1174	9	The water board has the authority to decide how much water is left in the river. Using your	Please see Master Response 1.1, General Comments for responses to comments that either make a general

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		<p>authority to keep 60% in the river meets the basic legal expectation established by the Water Control Plan. This is the most beneficial use of our water. Article X section 2 of the California Constitution suggests we do what is most beneficial. Continuing to allow Salmon in our rivers and fresh water is good for the environment and good for people who are in the fishing and tourism industry.</p> <p>The EPA wants even more water according to a letter to the board from March 28th , 2013 “These scientists recommended the equivalent of no less than 90% UF to achieve a high level of ecological protection, and no less than 80% UF to achieve a moderate level of ecological protection.” The person writing the letter from the EPA is obviously an expert referring to the work of scientists that are looking at this issue from a global perspective. Honestly 60% might not be enough but it is a good jumping off point and when the plan is revisited in 3 years perhaps we will have to keep more water in the rivers.</p>	<p>comment on the plan amendments or do not raise significant environmental issues.</p>
1174	10	<p>One thing is certain there will be those wielding wealth and influence to try and deter the Board from doing the job of reducing the water being taken out of the rivers. Almond farmers have become a force to reckon with as their crop becomes more and more valuable each year, and they can use their money to fund campaigns against fish, and against the environment. Their arguments can seem very plausible citing other threats against our salmon beyond lack of water. One thing big-Ag has trouble competing against is common-sense. According to NPR “California’s almonds consume three times more water than the entire city of Los Angeles.” That kind of usage is simply not sustainable.</p> <p>The Almond.com website is ground zero for their own propaganda machine, and I will share a quote from them I absolutely agree with, “With population growth and increased regulatory demands, California’s water resources are more stretched than ever.” Something has got to give, and that is either we back off the extremely unsustainable use of water or we just let the environment and the fish die. The fishing industry and tourism generated by the fishing and the natural surrounding will not be able to come back because once it is gone it is gone for good. The farmers on the other hand can grow less almonds or grow other crops.</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>
1174	11	<p>I hold the board in the utmost esteem and am certain the members can rise above politics, above outside influences, and make a decision that is in the best interests of all Californians. This is a choice that if made poorly could effect California negatively forever, along with marine life.</p> <p>While whales, birds, and salmon can not be their own lobbyists they depend on people like me to become informed and advocate for them. According to the Fresh Water Report I cited earlier by Stephanie Wong, Page 23 “As the effects of climate change become more acute, the benefits of freshwater flow for coastal waters will become even more critical. Warming ocean conditions, weaker upwelling, and shifts in the Pacific Decadal and North Pacific Gyre Oscillation are reducing marine productivity along the California coast with cascading effects on the food web.”</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>
1174	12	<p>Table ES-2 on page ES-22 of the executive summary of changes to the WQCP now being considered shows that if the flow objectives were set at 60% of unimpaired flow, the loss to farmers would be 689,000 acre-feet of water annually. Table 11-2 on page 11-42 shows that 115,054 acres that would “lose” water are planted in almonds and pistachios. The choice is not one between saving the salmon and their ecosystem and depriving farm families of their</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>

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		<p>livelihood. Rather, the choice is whether agribusiness and hedge funds will continue to reap exorbitant profits from almonds, or whether the affected acreage will be re-planted with crops reasonably grown in an arid climate.</p>	
1174	13	<p>We've seen fish populations dwindle. Not doing anything to increase water is not helping. It is frightening how much damage we as humans can do to the world around us. The argument of doing things in the name of progress is false, having whole species die out so people all over the world can eat more nuts is, well, nuts. The only thing we can do in good conscience is take a stand.</p> <p>For the sake of our state, our nation, and our planet we should make the hard choice and allow California to continue being the beacon of good environmental stewards. It is our values, and our commitment to one another and the environment that makes us unique and makes us special. We are the envy of the nation and the world. This is one of the most beautiful places in the world, shouldn't we keep it that way? There is no good alternative, except to do the right thing and allow at least 60% unimpaired flow.</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>
1174	14	<p>I am asking the board to make a controversial decision that will have long lasting consequences that will possibly drastically alter some people's lives.</p> <p>As a single father of 3, I am constantly explaining to my kids the difference between right and wrong. The basic stuff like don't steal, don't hurt people or animals. It occurs to me this is very similar. We have been stealing a large majority of the water and it is hurting the fish and the environment. One of the other lessons I teach my kids is to do things to make up for harm you've done. Say you are sorry and do things to make up for your actions. Lets make up for taking the water and give some back, it's the right thing to do.</p> <p>Back in the sixties and seventies when air pollution was coming into its own we created more and more rigid pollution controls on vehicles because it made sense to protect the environment. Richard Nixon signed on for the creation of the EPA because rich or poor we all have to breathe, eat food, and drink water. In California we have some of the strictest environmental regulations in the country and in the world. There is a reason for our strict regulations, because we know we need them and we believe in science.</p> <p>I read the letter from the EPA representative that I cited earlier, and I know she is much smarter and in the know than I am. I personally am not calling for as much water in the river as she is but in 3 years we may have to increase to her suggested levels. I think it is better to get the farmers used to less now than to wait and do something that drastic in one shot. There is one thing that is clear, the time is now, the power is yours, I ask please use your power wisely and for the best for all not the few.</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>
1174	15	<p>Attachment 1: San Francisco Bay: The Freshwater-Starved Estuary</p> <p>How Water Flowing to the Ocean Sustains California's Greatest Aquatic Ecosystem.</p> <p>The Bay Institute.</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>
1174	16	<p>Attachment 2: Historical Fresh Water and Salinity Conditions in the Western Sacramento-San Joaquin Delta and Suisun Bay, Tech Memo WR 10-001 [Contra Costa WD]</p>	<p>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.</p>

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1175	1	<p>Tracy has long taken issue with the attainability of current southern Delta water quality objectives for salinity and has been a vocal advocate for change, both to the objectives and to the program of implementation for these objectives as applied to municipalities. As such, Tracy is hopeful that the State Water Resources Control Board (State Water Board) and its staff will adopt more regulatory flexibility for application of the proposed salinity objective in the southern Delta while still reasonably protecting existing beneficial uses.</p>	<p>This comment generally states the city of Tracy's position on the southern Delta salinity objectives. 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. Also, please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTWs. Please see Appendix K for changes to the Program of Implementation related to POTWs.</p>
1175	2	<p>Tracy is concerned that the Southern Delta Water Quality (SDWQ) component of the Bay-Delta Plan Amendment, proposing an Electrical Conductivity (EC) objective of 1.0 deciSiemens per meter (dS/m)[Footnote 1: The proposed Bay-Delta Plan Amendments express EC units in either deciSiemens per meter (dS/m) or micromhos per centimeter (<math>\mu\text{mhos/cm}</math>), where 1.0 dS/m equates to 1,000 <math>\mu\text{mhos/cm}</math>. This letter uses dS/m throughout as a rolling 30-day average, will impose an unnecessary burden on the Tracy wastewater treatment plant (WWTP) without creating any measurable improvement in salinity in the southern Delta.</p> <p>Tracy fears that the proposed SDWQ salinity objective will be interpreted as previous objectives were interpreted, as an end-of-pipe effluent limit equal to the objective, and applied as a monthly average. (See accord Appendix K, Revised Water Quality Control Plan, at pp. 45-46.) The SED also interprets application of this objective in this way as its impact analyses for publicly owned treatment works (POTWs) presumes permit limits of 1.0 dS/m. (See SED at pp. 13-70.) Given that Tracy's WWTP effluent, even with source control and a lower salinity source water supply, can still exceed 1.2 dS/m, imposing the salinity objective as an end-of-pipe effluent limit will impose an infeasible limit and an unnecessarily high cost burden on Tracy. To attempt to consistently meet a 1.0 dS/m effluent limitation, Tracy would have to desalinate its wastewater with its attendant high energy use and greenhouse gas impacts. Such extraordinary treatment is unnecessary since studies have shown that Tracy's wastewater discharges represent a de minimis source of salts, and removal of Tracy's discharge altogether would not substantially change the salinity in the Southern Delta.</p> <p>Tracy, along with CVCWA and other Delta POTWs, proposes adoption of implementation provisions, as required under Water Code section 13242, where the determination of reasonable potential under National Pollutant Discharge Elimination System (NPDES) regulations (at 40 C.F.R. §122.44(d)(1)) and determination of compliance with the salinity objective are measured in-stream, rather than at end-of-pipe. This and other flexibility must be added to the implementation provisions for the adopted objective to ensure that POTWs can consistently and feasibly comply with the objective without bearing unnecessary costs. The only other way to ensure consistent compliance would be to adopt the 1.4 dS/m objective, which does not have the same substantial and unavoidable environmental impacts because that higher objective does not implicate the need for desalinization.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTW's and the changes to the Program of Implementation proposed by the POTWs. Please see Appendix K for changes to the Program of Implementation related to POTWs.</p> <p>The salinity objective is intended to protect salt-sensitive crops grown in the southern Delta, such as beans, alfalfa, and almonds. A higher objective, such as SDWQ Alternative 3 (1.4 dS/m), would have greater yield losses than SDWQ Alternative 2 (1.0 dS/m). For example, Chapter 11, Agricultural Resources, states that SDWQ Alternative 3 would result in a 5 percent yield reduction of dry beans under a scenario with minimum precipitation and a leaching fraction of 20 percent while SDWQ Alternative 2 would result in no yield reductions under the same scenario. Thus, SDWQ Alternative 3 is less protective of agricultural beneficial uses.</p>
1175	3	<p>NPDES Permitting flexibility is critical to avoid stringent permit limits on discharges that have a de minimis impact on salinity in the Delta.</p> <p>The Bay-Delta Plan Amendment concedes that "Overall, the WWTPs [wastewater treatment plants] have only a small effect on southern Delta salinity." (See SED, pp. 13-23.) The de minimis impact of the Tracy WWTP on salinity levels in the southern Delta is also acknowledged in the Bay-Delta Plan Amendment through its presentation of the conclusions drawn from a California Department of Water Resources (DWR) modeling study of NPDES</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding application of the salinity objectives to POTW's. Please see Appendix K for changes to the Program of Implementation related to POTWs.</p>

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		<p>discharges performed in 2007, which was performed to better understand the salinity impacts of new and expanded discharges from Tracy and Mountain House. That modeling study "concluded that the City of 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." (See Appendix C, Technical Report of the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, pp. 4- 10). Furthermore, a February 2012 mass balance analysis performed by the State Water Board, which compared the maximum permitted salinity loads from the point source discharges of Tracy, Mountain House, and Deuel Vocational Facility to the salinity loading entering the Head of Old River, determined "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." (See Appendix C, Technical Report of the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, pp. 4-11)</p> <p>A similar analysis to the far-field water quality impact analyses was conducted for southern Delta POTWs [publicly-owned treatment works] 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). In that analysis, DWR's Delta Simulation Model 2 (DSM2) results were used with EC effluent data for the Tracy WWTP to estimate water quality changes in downstream receiving water quality with and without the implementation of Reverse Osmosis (RO). (See DWR, DSM2 Modeling Evaluation, City of Tracy and Mountain House CSD (March 29, 2007).)</p> <p>The incremental, far-field water quality data, presented in the following Table 1 [ATT 1], showed a de minimis influence of Tracy's 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 River at Brandt Bridge). In even the worst case scenario involving the Tracy discharge, which correlates to periods of low Delta exports, the highest estimated percent change in ambient EC was less than one percent (0.98%) at the Old River at Tracy Road Bridge modeling location. In contrast, the high Delta export scenario showed a difference just 0.04%.</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 graphically in Figure 1 [ATT 2]. This figure illustrates the very small, if any, difference in estimated ambient EC levels downstream of the Tracy WWTP for a discharge scenario that includes RO treatment. Further, given that Tracy's salinity levels are now lower than those seen in 2006 and 2007 when the DWR study was performed (see Figure 2 [ATT 3]), the difference is probably even less now.</p>	
1175	4	[ATT 1: Table 1. DWR DSM2-Modeled Incremental Far-Field Water Quality Changes for October flows with Implementation of Partial Reverse Osmosis Treatment at the Tracy WWTP]	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.
1175	5	[ATT 2: Figure 1: City of Tracy WWTP Modeled Incremental Far-Field Water Quality Changes Associated with Implementation of RO under Low Delta Exports in October (based on DWR	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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		DSM2 Modeling.)]	
1175	6	<p>The SED proposes compliance strategies with substantial and unavoidable impacts that will not significantly reduce salinity in the Delta.</p> <p>The SED suggests that the City should implement the following compliance options to meet a proposed southern Delta salinity water quality objective of 1.0 dS/m: (1) acquire new source water supplies, (2) implement salinity pretreatment programs, and (3) implement desalination.</p> <p>The SED ignores the fact that Tracy has already made a substantial investment in procuring and delivering significant new low salinity source water supplies from South San Joaquin Irrigation District (SSJID) at a cost of \$80 million. [Footnote 2: The interconnection between flow and salinity is not explored adequately in the SED as the SED fails to analyze and disclose the impacts of the Lower San Joaquin River (LSJR) flow objectives on the ability of POTWs, such as Tracy, to comply with the SDWQ salinity objectives. Specifically, the SED suggests that municipalities and POTWs 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. (See SED at pp. 4-16.) However, the SED fails to mention that the LSJR objectives may frustrate Tracy's ability to maintain its current level of surface water supply, and may prevent the ability to obtain more surface water supply. These impacts are of particular concern to Tracy, which obtains its surface water supplies from the Stanislaus River via SSJID. Without available surface water flows, Tracy must rely more heavily on saltier groundwater.] Tracy has also been implementing salinity source control programs/pretreatment programs, under requirements in its existing NPDES permit, for many years. Although these actions resulted in improvements in Tracy's EC effluent quality compared to that measured in the early 2000s, substantial further improvements are unlikely. In addition, these actions have not resulted in effluent quality that could consistently comply with a 1.0 dS/m EC end of pipe effluent limitation.</p> <p>Figure 2 [ATT 3] shows times series plot of actual EC effluent data from the Tracy WWTP effluent and evidences decreasing EC levels over time, from the peak in 2006 when a new surface water supply was obtained from SSJID. However, the plot also shows EC levels increasing before and during the recent drought. Annual average EC levels were at or above 1.2 dS/m during the drought years of 2012-2016.</p> <p>While an objective of 1.4 dS/m would be easily attainable, [Footnote 3: Even though the 1.4 dS/M objective does not raise the same substantial and unavoidable impacts, the SED somehow concludes that 1.0 dS/m is the environmentally superior alternative. (See SED at pp. 18-33.) It is unclear how the SED can make this conclusion when the 1.0 dS/m objective results in significant and unavoidable impacts on service providers and the environment (e.g., increased energy use, GHG impacts, brine disposal, etc.), while the 1.4 dS/M objective will not result in any significant and unavoidable impacts. (See SED at pp. 18-32).] the ability to continue to improve source water supplies to meet a 1.0 dS/m objective is limited. New surface water supplies are becoming less available, and are likely to become even more scarce and expensive as proposed flow restrictions also included as part of the Bay-Delta Plan Amendment will inevitably impact the availability of less saline water. As surface water volumes become less reliable, particularly during times of droughts, Tracy must pump local saltier groundwater to make up for losses in surface water supplies, which increases effluent EC.</p>	<p>Please see Master Response 3.6, Service Providers, for responses to comments regarding potential impacts of the SDWQ alternatives on service providers and regarding salinity reduction options available for POTWs. Please see Appendix K for changes to the Program of Implementation related to POTWs. Chapter 18's summary of impacts and comparison of alternatives has been revised in light of the changes to Appendix K.</p>

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		<p>The SED finds that the proposed preferred alternative, SDWQ 2 (30-day rolling average EC objective of 1.0 dS/m), presents significant and unavoidable impacts on service providers because the SED considers desalination, specifically RO, as the only way POTWs can reduce EC in their effluent to meet this objective. [Footnote 4: In the State Water Board 's Water Quality Order 2005-005 (for the City of Manteca), the State Water Board concluded that construction and operation of a large-scale reverse osmosis treatment plant to reduce the salt load in municipal wastewater discharges "would not be a reasonable approach." ] (See SED at pp. 13-70.) The SED's recommendation for desalination of municipal wastewater has not been implemented by Central Valley POTWs, due to the increased energy consumption, increased greenhouse gas (GHG) emissions, increased costs to ratepayers, and potential challenges associated with brine disposal. Furthermore, as shown in Figure 1 [ATT 1], the implementation of RO treatment for Tracy would impart no measurable water quality benefit in the receiving water. Planning level estimates of the capital and operations and maintenance (O&amp;M) costs associated with implementation of RO treatment to meet a proposed 1.0 dS/m EC objective for Tracy are over \$52 million in capital (assuming treatment of 8.3 million gallons per day (mgd)), over \$5 million in annual O&amp;M, and a total annual cost of nearly \$9 million (total annual cost= annualized capital cost + annual O&amp;M cost). These new costs would be in addition to existing annual O&amp;M costs for the Tracy WWTP and annual expenditures for the supply and treatment of less saline source water.</p> <p>Although Tracy has been an innovation leader in piloting a new thermal desalination process, this process has never been tested at full scale for municipal wastewater treatment. Therefore, it is unclear whether or not Tracy could feasibly comply with a 1.0 dS/m objective end of pipe without traditional RO processes, with the attendant brine and energy costs and related potential environmental and greenhouse gas impacts. Given these substantial impacts and minimal benefit, RO should be considered infeasible at this time.</p> <p>Instead of adopting a stringent water quality objective, presumed to apply end of pipe, Tracy urges the State Water Board to consider regulatory flexibility incorporated into the implementation plan for the adopted objective as required by Water Code section 13242.</p>	
1175	7	[ATT 3: Figure 2: 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.
1175	8	<p>Additional Alternatives for State Water Board's Consideration to Avoid Significant and Unavoidable Impacts.</p> <p>Deliberations over the proposed Bay-Delta Plan Amendments should consider the following alternatives and provisions within a program of implementation related to the proposed southern Delta salinity water quality objective. One or more of these alternatives is necessary to avoid substantial impacts to Delta POTWs [publicly-owned treatment works] and the environment.</p> <p>Inserting dilution and de minimis impact considerations into the reasonable potential analysis (RPA) when determining whether effluent limitations for salinity are required under NPDES regulations. This can be accomplished by utilizing data from downstream locations for the RPA instead of end of pipe effluent values. This can also be accomplished by allowing modeling, such as the DMS2 model, to be used to demonstrate that effluent limitations are not necessary. [Footnote 5: The SED currently 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>	Please see Master Response 2.4, Alternatives to the Water Quality Control Plan, for discussion of the Alternatives analyzed. 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. Please see Appendix K for revisions to the Program of Implementation related to POTWs, which incorporates commenter's suggestion to allow best management practices to avoid environmental impacts. Please see the response to comment 2 above on why SDWQ Alternative 3 does not protect agricultural beneficial uses as well as SDWQ Alternative 2. Mitigation measures for reasonably foreseeable methods of compliance are set forth in Chapter 16.

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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.) 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. As the Court stated in the City of Tracy v. SWRCB case: "Measuring Tracy's 'reasonable potential' at its discharge pipe deprived Tracy of a potential "mixing zone" for its discharge" and "require[d] the Board to perform the reasonable potential analysis at the Old River/Tracy Road Bridge compliance location , as required by the 2006 Bay- Delta Plan." The program of implementation should continue to use compliance locations for this purpose.] This would also be consistent with USEPA's Technical Support Document for Water Quality-based Toxics Control, which allows for dilution credits to be considered when conducting a reasonable potential analysis.</p> <p>The implementation plan for the new objectives should instruct the Water Boards to conduct the RPA for Delta dischargers using ambient data 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.</p> <p>Where limitations are necessary, insert flexibility into POTW effluent limit derivation by:</p> <ul style="list-style-type: none"> <li>- prescribing annual average limits and including express findings of impracticability for shorter term limits as required by 40 C.F.R. §122.45(d), using mass-based effluent limits instead of concentration limits, which are based on calculated load allocations developed through a watershed loading analysis and facility-specific water quality modeling analysis similar to the waste load allocation (WLA) process used for a total maximum daily load (MDL) under federal regulations and NPDES permit guidance,</li> <li>- providing dilution credits based on downstream water quality, and/or authorizing narrative or Best Management Practice (BMP) based effluent limitations because the salinity objective is infeasible to comply with as a numeric end of pipe effluent limitation.[Footnote 6: The Tracy decision held that "numeric effluent limitations are not necessary to meet the requirements of the federal Clean Water Act. (Communities for a Better Environment, supra, 109 Cal.App.4th at p. 1093.) Indeed, federal regulations expressly permit non-numeric effluent limitations - such as best management practices - when numeric effluent limitations are 'infeasible.' (40 C.F.R. §122 44(k)(3); see also State Board Order WQ 2006-0012, p. 16.) ... Communities for a Better Environment makes clear that one factor a board may consider in determining whether a numerical effluent limitation is 'feasible' is the 'ability of the discharger to comply .' (See Communities for a Better Environment, supra, 109 Cal.App 4th at pp 1100.) The court expressly approved the regional board's consideration of this factor in upholding the determination that numeric effluent limits were not 'appropriate' for the refinery at issue in that case. (Id. at p.1105 [approving determination that numeric WQBEL was not feasible 'for the reasons discussed above,' which included inability of discharger to comply.])"</li> </ul> <p>Maintain use of compliance locations where compliance with the new objectives will be determined for Tracy's discharge. (See Water Code§ 13242, which requires "a description of surveillance to be undertaken to determine compliance with the objectives.") Compliance would be determined in-stream rather than at the end-of-pipe. At the downstream location, compliance should be able to be more easily demonstrated. [Footnote 7: In the City of Tracy v. SWRCB case, the court held that the State Water Board "prejudicially abused its discretion in finding the 2006 Bay-Delta Plan authorizes the Board to perform the 'reasonable potential' analysis at the end of Tracy's discharge pipe, rather than at the Old River/Tracy</p>	

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		<p>Road Bridge compliance location." By removing the references to compliance locations and making the objectives applicable to the whole reach, this analysis will be changed in a way that disadvantages Tracy and ensures a finding of reasonable potential, even when an effluent limitation may not be necessary.]</p> <p>Adopt the objective as a range from 1.0 to 1.4 dS/m as is done with the incorporated Maximum Contaminant Levels (MCLs) for EC and TDS to protect municipal and domestic drinking water (MUN) uses. This would allow flexibility to use a higher number where needed for discharges such as Tracy's, which can exceed 1.0 dS/m, but do not cause exceedances in the receiving water.</p> <p>Adopt a site specific objective (SSO) for the reach of the southern Delta where Tracy discharges of 1.25 dS/m to accommodate Tracy's discharge without requiring RO treatment. This level would still provide reasonable protection of the AGR use [Footnote 8: The City of Tracy v. SWRCB case stated: "A fundamental premise of Porter-Cologne is that water quality regulation must be 'reasonable.' The goal of Porter-Cologne is to attain the highest quality water which is reasonable, considering all demands being made and to be made on those waters and total value involved, beneficial and detrimental, economic and social, tangible and intangible . (Water Code§ 13000.) Consistent with this goal, Porter-Cologne requires water quality control plans to establish such water quality objectives as 'will ensure the reasonable protection of beneficial uses" and the prevention of nuisance. (Water Code §§13050(f), 13241.)" The SED concluded that 1.4 dS/m would not have a significant impact on agriculture in the southern Delta. (See SED at pp. 11-57.) Thus, 1.25 dS/m would not have significant adverse impacts on agriculture either.] and, given modeling results, would be unlikely to change ambient water quality.</p> <p>Consider seasonal objectives that allow higher salinity in higher flow scenarios. The previous objectives for EC contained in the Delta Plan were seasonal with two different objectives (0.7 and 1.0 dS/m), depending on season.[Footnote 9: Per the 1978 Delta Plan, the State Board envisioned that these objectives would be achieved by controlling water quantity/flow through conditions on the water rights permits issued to USBR and DWR.] Objectives of 1.0 and a higher objective (between 1.0 and 1.4) could be adopted to maintain seasonality and flexibility.</p> <p>Incorporate the flexibility being offered in the Central Valley through the CV-SALTs program and Basin Plan amendments, so that exceptions/variances, offsets, drought policies, and other long term salinity management strategies can be incorporated into NPDES permit provisions as needed.</p> <p>Incorporate drought provisions, allowing a higher EC objective (up to 1.4 dS/m) in drought and immediately after drought years.</p> <p>Incorporate the Clean Water Act analysis in 33 U.S.C. §1312(b)(2), which allows the issuance of an NPDES permit that modifies the effluent limitations that otherwise would be required under the Act "if the applicant demonstrates at [a] hearing that there is no reasonable relationship between the economic and social costs [of the effluent limitations] and the benefits to be obtained (including attainment of the objective of [the Act]) from achieving such limitation." The Court in the Tracy decision opined that this would be allowed for</p>	

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		<p>salinity, since EC is not a priority toxic pollution.</p> <p>These considerations are required under the Water Code and under CEQA. "[I]n preparing an EIR [or equivalent such as an SED], the agency must consider and resolve every fair argument that can be made about the possible significant environmental effects of a project, irrespective of whether an established threshold of significance has been met with respect to any given effect." <i>Protect the Historic Amador Waterways v. Amador Water Agency</i>, 116 Cal. App. 4th 1099, 1109 (2004). Here, the proposed 1.0 dS/m objective was determined to have substantial and unavoidable impacts. (See accord SED at pp. 13-70.) When a project will cause potentially significant impacts, the environmental document must propose and describe mitigation measures to minimize or avoid those effects. <i>East Sacramento Partnership for a Livable City v. City of Sacramento</i>, 5 Cal. App. 5th 281, 303 (2016), citing Pub. Res. Code §§ 21002.1(a), 21100(b)(3) ; State CEQA Guidelines , 14 C.C.R. § 15126.4(a)(l); <i>Gray v. County of Madera</i> , 167 Cal. App. 4th 1099, 1116 (2008) [project raised a "potentially significant problem ," requiring mitigation measures to "present a viable solution"].</p> <p>CEQA requires the lead agency to adopt all feasible mitigation measures to avoid or reduce the project's potential environmental impacts: "It is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental impacts of such projects ...." <i>Citizens of Goleta Valley v. Bd. of Supervisors</i>, 52 Cal. 3d 553, 565 (1990).</p> <p>The State Water Board has not committed to any specific measures that would mitigate the project's significant impacts, and thus has failed to meet its obligations under CEQA. Cf. <i>Gray v. County of Madera</i>, 167 Cal. App. 4th 1099, 1119 (2008). The above listed alternatives present feasible mitigation measures that would reduce or eliminate the "unavoidable" impacts of the 1.0 dS/m objective by avoiding the need to implement desalination technologies that were responsible for the main impacts noted.</p> <p>Representatives for Tracy and other CVCWA members have met with State Water Board staff to propose specific language related to some of the above proposals that is acceptable to staff. We have also met with the Central Valley Regional Board's permit writing staff to determine ways to ensure that POTW s are not held to more stringent standards than other dischargers in the southern Delta with regard to the salinity objective. Tracy requests that these proposals be given serious consideration and be incorporated into the final Bay-Delta Plan Amendment and SED. With the incorporation of some or all of the proposed alternatives into the program of implementation for the new objective, the SED should be able to refine its analysis of the impacts on service providers accordingly, since the program of implementation would modify the conclusion regarding significant and unavoidable impacts.</p>	
1175	9	<p>Tracy's Suggested Changes will assist the State Board in fulfilling its obligations under the City of Tracy decision.</p> <p>On June 25, 2009, Tracy filed a petition for a peremptory writ of mandate and complaint for declaratory relief in this action. Tracy, along with CVCWA, sought to invalidate the provisions of the Bay-Delta Plan relating to the southern Delta EC objectives, as well as the State Water Board's Order WQ 2009-0003, applying the challenged provisions of the Bay-</p>	<p>Please see Master Response 3.6, Service Providers regarding the potential effects of the SDWQ alternatives on wastewater treatment plants. Please see Appendix K for changes to the Program of Implementation related to POTWs.</p>

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		<p>Delta Plan to Tracy's municipal WWTP.</p> <p>On June 1, 2011, the Sacramento Superior Court entered a Judgment and issued a Peremptory Writ of Mandamus in the case of City of Tracy v. SWRCB, et al, Case Number: 34-2009- 80000392, ordering the State Water Board to do the following:</p> <p>Before applying the provisions of the Bay-Delta Water Quality Control Plan related to the Southern Delta Agricultural Water Quality Objectives for Electrical Conductivity (the "EC Objectives") to municipal dischargers such as Tracy, the State Water Board shall:</p> <ol style="list-style-type: none"> <li>1. Conduct the analysis required by Water Code§ 13241;</li> <li>2. Reconsider and revise the provisions of the Bay-Delta Plan related to the EC Objectives in light of the §13241 factors; [Footnote 10: The court in the City of Tracy case determined that "When establishing water quality objectives, Porter-Cologne imposes an affirmative duty on the State to consider a number of factors, including economic considerations, environmental characteristics of the area, and whether the proposed objective is attainable. (Water Code§ 13241; see also [] Atwater Memo.)" The Court further held that "The California Supreme Court has endorsed the view that section 13241 requires consideration of the 'cost of compliance ' (See City of Burbank, [] 35 Cal 4th at p. 625 [finding the 'plain language ' of section 13241 requires the board to consider the 'cost of compliance '])." Thus, the State Water Board must consider compliance costs when establishing water quality standards, and can adjust those standards to make compliance less costly so long as the beneficial uses are reasonably protected. (See City of Burbank, supra , 35 Cal.4th at p.623 [affirming conclusion of court of appeal that section 13241 requires a regional board to take economic considerations into account when it adopts water quality standards in a basin plan].)] and</li> <li>3. Adopt a proper program of implementation under Water Code § 13242 describing the nature of the actions necessary for municipal dischargers to achieve the EC Objectives, providing a reasonable time schedule for the actions to be taken, and describing the surveillance required to determine compliance.</li> </ol> <p>The Judgment and Writ also enjoined the State Water Board from applying the existing EC objectives to Tracy and other municipal dischargers in the Delta pending satisfaction of the Writ. A final return on this writ is still pending, nearly 6 years later, awaiting the Bay-Delta Plan Amendment.</p> <p>The decisions made in the Tracy case are binding on the State Water Board in these proceedings on the Bay-Delta Plan Amendment because this action is part of the remand from the Court and these decisions were not appealed. As such, the State Water Board must consider all of the 13241 factors, revise the provisions related to EC objectives in light of those considerations (including cost of compliance), and adopt a proper program of implementation specific to Delta municipalities. Tracy believes the suggested modifications will assist the State Water Board fulfill its obligations under the writ in the City of Tracy decision, and will result in less impacts at the same time as reasonably protecting the agricultural beneficial use in the southern Delta.</p> <p>Tracy stands ready to assist as needed in creating language needed to meet these legal obligations, and encourages the State Water Board to also consider the comments and proposed modified language for incorporation into the Amendment provided separately by</p>	

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		CVCWA and the other Delta POTWs prior to final adoption of the Bay-Delta Amendment.	