Chapter 4 Comment Response Tables

Ltr#	Cmt#	Comment	Response
1	1	As you may know, under California law, any member of the public may be on navigable water including the temporarily dry bed and banks of a navigable water and there engage in recreational activity. For these purposes, “navigable” means susceptible to navigation, even if only in a canoe. California public agencies must consider the effect of their decisions on public access to and use of these navigable waters, and refrain from interfering with this public trust use whenever feasible. This consideration must be in a public open process. Further, the public has a state constitutional right to fish on state-owned land; and, no land owned by the state may be sold or transferred without reserving in the people the absolute right to fish thereupon. The United States should be aware that the state cannot transfer land to the United States without reserving in the people the absolute right to fish. Further, that state agencies cannot make decisions that will have the effect of interfering with public access to or use of navigable waters without meeting the procedural requirements. In planning reclamation activities in California, the United States should consider these basic traditional concepts of California and its approach to public access to and use of waters.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The EIS alternatives do not include the transfer or sale of land. Public use and fishing access will be retained. Reclamation is the lead agency undertaking compliance with the National Environmental Policy Act for this project and the decision-making agency for this EIS. California public agencies may undertake their own California Environmental Quality Act (CEQA) compliance and decision-making process at some time in the future. Please see Master Response 1, Responses to General Comments, for discussion of CEQA and the State processes. Please see Master Response 1, Responses to General Comments, for discussion of Reclamation’s noticing and meetings regarding the publication of the Draft EIS.

Ltr#	Cmt#	Comment	Response
2	1	The San Joaquin River flow graphs do not add up. [See Exhibits 1, 2, and 3.]	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The figures have been updated in Appendix C – Facility Descriptions and Operations to include the missing data.
2	2	[Exhibit 1: Copy of DEIS page C-63 with notes on Figure C.4-3. Millerton Lake Outflow.]	The figure has been updated in Appendix C – Facility Descriptions and Operations to include the missing data.
2	3	[Exhibit 2: Copy of DEIS page C-66 with notes on Figure C.4-5. San Joaquin River at Gravelly Ford and Figure C.4-6. San Joaquin River Near Dos Palos.]	The figure has been updated in Appendix C – Facility Descriptions and Operations to include the missing data.
2	4	[Exhibit 3: Copy of DEIS page C-67 with notes on Figure C.4-7. San Joaquin River near Washington Rd.]	The figure has been updated in Appendix C – Facility Descriptions and Operations to include the missing data.

Ltr#	Cmt#	Comment	Response
3	1	Butte County recently became aware of the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project (Project) and State Water Project draft Environmental Impact Statement (EIS). Butte County did not receive notification on either the issuance of the draft EIS on July 11 , 2019 or the meeting that was held in Butte County on August 1, 2019. The lack of notice precludes ample time to provide comments on the EIS by August 26, 2019. Therefore, Butte County requests that the U.S. Bureau of Reclamation extend the comment period until October 18, 2019. Butte County has a vested interest in the Project and its potential impacts. In addition to being in the Project study area, Butte County is a State Water Project Contractor. Frankly, we were surprised that the U.S. Bureau of Reclamation did not provide sufficient notice to every county in the study area or to all State Water Project Contractors.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, regarding the adequacy of public involvement and engagement activities related to the Draft EIS.

Ltr#	Cmt#	Comment	Response
4	1	You need to withdraw the DEIS on the Reinitiation of Consultation on the Coordinated Long Term Operation of the Central Valley Project and State Water Project (ROC on LTO) and re-circulate a DEIS responsive to the National Environmental Policy Act (NEPA) and useful for public review. The present draft document is unsatisfactory as it does not comply with key procedures for preparation of an environmental document under NEPA. The DEIS thwarts public comprehension and comment.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments regarding the requirements for a supplemental EIS. Please see Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of the analysis contained in the EIS.
4	2	The present draft does not include at least one and likely two additional alternatives necessary for making adequate environmental disclosure. An alternative is needed that complies fully and consistently with State Law and State Water Resources Control Board plans and orders including Water Rights Order 90-5. State Water Board Water Rights Order 90-5 is one of many defining and essential conditions ignored by alternatives of the existing document. The primary duty under NEPA is to understand the environmental impacts of a proposed action, not just to facilitate an alternative selection or pre-selection. An alternative that displays compliances with State Water Rights Decision D-1641 and orders and permit requirements and the State Water Board's Unimpaired Flow proposal is essential to understanding the environmental impacts on riverine and estuarine aquatic resources of increasing water deliveries above baseline.	Please refer to Master Response 4, Alternatives Formulation, for a discussion regarding the sufficiency of the range of alternatives evaluated in the EIS. Please see Master Response 1, Responses to General Comments, regarding water rights and the State Water Board's ongoing process to update the Bay-Delta Water Quality Control Plan. Reclamation will continue to operate to meet the requirements of Water Rights Order 90-5.

Ltr#	Cmt#	Comment	Response
4	3	Water project operations and direct water diversions collectively have done tremendous damage to native fishes of the Central Valley and the Sacramento-San Joaquin River estuary and the population-level impacts of yesteryear's operations are still coming to be realized. The objective of further increasing water exports on average by 592 KAF and thereby decreasing delta outflow by 632 KAF is a huge incremental increase that will cause inordinate further damage to aquatic resources, the effects of which will not be fully understood for years. The imbalance of diversions/exports and delta outflows that has already occurred is great. Given the imbalance that might occur in some water years extreme to the average, the imbalance will be bigger than huge. This draft document is unsatisfactory as it does not display the potential for further environmental damage.	Please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding impact determinations and sufficiency of analyses included in the EIS. See Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding surface water modeling results and water year types, including discussion of drought considerations. Refer to Master Response 7, Aquatic Resources, regarding general comments on negative impacts to aquatic resources, anticipated effects to aquatic resources from changes to Delta outflow, and Delta smelt summer-fall habitat operations. Please see the EIS, Chapter 5, Environmental Consequences, specifically at Section 5.9.1.7, Bay Delta, for discussion of potential impacts to aquatic resources of the Bay-Delta resulting from reduced Delta outflow. Also see Appendix O, Aquatic Resources, Section O.3., Evaluation of Alternatives, for discussions of potential effects to aquatic resources of the Bay-Delta under each alternative.

Ltr#	Cmt#	Comment	Response
5	1	Section 5.9.1.7.7 – Longfin smelt The Environmental Consequences section of the Draft EIS acknowledges that reduced winter-spring Delta outflow and increased entrainment risk associated with Alternative 1 may impact longfin smelt. Although the document notes a link between winter-spring outflow and longfin smelt abundance, no minimization or mitigation measures are proposed to avoid or minimize such adverse environmental impacts. We [CDFW] suggest conducting a more thorough quantitative analysis, using published outflow-abundance relationships, to quantify potential impacts to longfin smelt as a result of Alternative 1. If this analysis demonstrates adverse impacts to longfin smelt we suggest adding an alternative or mitigation measure in the form of increased Delta outflow during the January – June time period to minimize impacts. (See 40 C.F.R. §§1502.14, subd. (f); 1502.16, subd. (h).)	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The EIS does address impacts to longfin smelt, in Section 1.4 (Areas of Controversy), as well as Section 4.8.2.8, which includes a description of their life history, in the aquatic resources impact analysis Sections 5.9.1.7.7 and 5.9.2.3.7, in the Cumulative Impacts analysis, and in Appendix O. Alternative 1 actions designed to benefit Delta smelt are anticipated to also benefit Longfin smelt. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding NEPA requirements for mitigation. A specific mitigation measure has been added to continue to monitor longfin smelt as coordinated with the Interagency Ecological Program.
5	2	Section 5.9.1.7.3 – Central Valley Fall-Run Chinook Salmon The Environmental Consequences section of the Draft EIS acknowledges potential impacts to fall-run Chinook as a result of increased entrainment risk associated with increased exports during the migration window for juvenile Sacramento River and San Joaquin River origin fall-run Chinook under Alternative 1. The document notes that increased flows in the Sacramento River under Alternative 1 may offset the impacts associated with increased	Please refer to Master Response 5, Adequacy of Analysis and Mitigation, and to Master Response 7, Aquatic Resources, regarding the adequacy of analyses, including use of qualitative analyses. Effects of flows and exports on entrainment risk were evaluated qualitatively based on the best scientific information available. Though quantitative analysis based on proposed operations were not conducted, analyses of entrainment for coded-wire-tagged fall-run Chinook were provided in Appendix O, Section O.3.3.8.6 of the Draft

Ltr#	Cmt#	Comment	Response
		entrainment risk of Sacramento River origin fall-run but does not provide a quantitative supporting analysis. We suggest conducting a quantitative analysis of impacts to fall-run Chinook as a result of Alternative 1 and adding appropriate minimization or mitigation measures to avoid or minimize adverse impacts in addition to the SWP/CVP south Delta salvage process.	EIS. These analyses indicated the average proportion of Sacramento River-origin fall-run Chinook salvaged over a 15-year period was 0.0001. Though risk of entrainment will generally increase with increasing exports, observed Sacramento River-origin fall-run salvage loss has never exceeded 1% regardless of export rate and is not considered substantial.
5	3	Section 3.4.1.1- Upper Sacramento River, Seasonal Operations The Project Description describes the following seasonal operations at Keswick: For spring base flows under wetter hydrology, during the March through May time period, downstream demands are minimal and are generally met through unstored accretions to the system. Under these conditions, Reclamation aims to reduce Keswick flows during the fall-winter period. Operations during this period help build storage in those types of years. Please note, it is likely that reduced Keswick flows during this time period would result in impacts to incubating fall- and spring-run Chinook salmon eggs and embryos due to increased water temperatures near redds, lowered velocities resulting in lower dissolved oxygen, and de-watering of redds resulting in suffocation of eggs and stranding of emergent alevins/fry. Additionally, reduced Keswick flows are likely to reduce spawning and rearing habitat for late-fall-run Chinook salmon and Central Valley steelhead in the mainstem Sacramento River downstream of Keswick.	Please see Chapter 5, Environmental Consequences, Section 5.9.1.2, Sacramento River, for discussion of potential project-level effects on salmonid populations anticipated under the alternatives, including discussions of potential changes to salmonid populations by life history stage. Refer to Appendix O, Section O.3.3.2, Sacramento River, for additional discussion of anticipated potential impacts and benefits to salmonids from seasonal operations under Alternative 1. This comment notes that reducing Keswick Dam flow releases during fall-winter risks producing adverse effects such as redd dewatering, increased water temperature, and juvenile stranding for Chinook salmon and steelhead. Reclamation acknowledges that lower fall-winter releases carry these risks, but these risks must be weighed against the risk of maintaining insufficient storage to protect winter-run and spring-run eggs and embryos against elevated water temperatures in the subsequent summer and fall. The decision about how much water to release for protection of the presently occurring fisheries resources versus how much to save for protection of the future resources is made every year under current conditions and would need to be made under any of the other project alternatives. Results of the HEC-5Q water temperature modeling suggest that Alternative 1 would provide somewhat more effective tools for favorable outcomes in this decision-making, at least with respect to water temperature (e.g., see Tables O.3-6 through O.3-8 in Appendix O). Refer to Master Response 7 for additional discussion regarding the need for balancing impacts from reduced fall-winter flows with benefits from enhanced storage for cold water pool management.
5	4	Section 3.4.1.2 – Upper Sacramento River, Spring Pulse Flows The Project Description states: Under Alternative 1, Reclamation would release spring pulse flows to help Spring-Run Chinook Salmon juvenile out-migration when the projected total May 1 Shasta Reservoir storage indicates a likelihood of sufficient coldwater to support summer coldwater pool management. Reclamation would evaluate the projected May 1 Shasta Reservoir storage at the time of the February forecast to determine whether a spring pulse would be allowed in March and would	Reclamation will consider collaboratively planning spring pulse flows releases with input from the Upper Sacramento River scheduling team. It is expected this team will consider the period of maximum spring-run juvenile emigration as one aspect of their planning, and this may be a primary factor for scheduling when it is feasible to do so. The comment also notes that a pulse flow action in drier years may provide the greatest benefit to emigrating spring-run juveniles. However, releasing water from storage in drier years is likely to conflict with the priority objective of

Ltr#	Cmt#	Comment	Response
		evaluate the projected May 1 Shasta Reservoir storage at the time of the March forecast to determine whether a spring pulse would be allowed in April. The majority of spring-run Chinook salmon juveniles present in the Sacramento River during March are in the fry and parr stages and are rearing, not actively out-migrating. In order to provide the most benefit to out-migrating spring-run Chinook salmon juveniles, CDFW recommends Reclamation and the Upper Sacramento River scheduling team use available data to time spring pulse flows with the peak outmigration period. Additionally, a pulse flow action in drier years may provide the greatest benefit to out-migrating spring-run Chinook salmon juveniles.	maintaining sufficient storage to protect cold water resources for incubating eggs and alevins of winter-run and spring-run in the summer and fall. Refer to Chapter 3, Alternatives, Section 3.4.1.3, Coldwater Pool Management, for more details on summer coldwater pool management and to Section 3.4.1.4, Fall and Winter Refill and Redd Maintenance, for more details on seasonal operation objectives during fall. Also refer to Appendix O, Section O.3.3.2, Sacramento River, for discussion of potential changes to aquatic resources in the Sacramento River from spring pulse flows. See Master Response 7 for additional discussion regarding the need for balancing benefits to from enhanced storage for cold water pool management with water needs of other life history stages. This recommendation is noted, and no changes to the EIS are needed.
5	5	Section 3.4.1.3 Upper Sacramento River, Cold Water Pool Management The Project Description states: Temperature management would end on October 31 or when the monitoring working group determines, based on real-time monitoring, that 95% of winter-run Chinook eggs have hatched and alevin have emerged, whichever is earlier. Ending temperature management prior to the emergence of all winter-run Chinook salmon is not protective of this State and federally listed endangered species. Additionally, this measure is not protective of State and federally threatened spring-run Chinook salmon, as their eggs will not have hatched and embryos will not have emerged before October 31. Thus, allowing increased temperatures as of October 31, or earlier, depending on when 95% of winter-run Chinook salmon have hatched and emerged, could result in substantial mortality of spring-run Chinook salmon eggs and embryos.	This comment indicates that ending water temperature management in the upper Sacramento River prior to the emergence of all winter-run Chinook salmon is not protective of this listed species and would potentially also result in substantial mortality of spring-run eggs and embryos. Although this statement is true for the period of time discussed (i.e., circa October 31), the statement does not address the longer term objective of this management action, which is to divert water to storage in the fall in order to maximize storage resources for protection of winter-run and spring-run eggs and embryos in the subsequent summer and fall. As discussed in the response to Comment 5-3, when water resources are limited, their immediate value for fish survival must be weighed against their future value. Reclamation's action seeks to maximize survival of fish using the limited water available. This balancing of current and future value of the water is described in the EIS Chapter 3, Section 3.4.1.4, Fall and Winter Refill and Redd Maintenance, and in Appendix O, Section O.3.3.2, Sacramento River. Alternative 1 places a higher priority on protecting Sacramento River winter-run than spring-run because the upper Sacramento River is effectively the only spawning habitat presently available to winter-run, while spring-run have viable spawning habitat in several other streams. As noted in Comment 5-3, results of HEC-5Q water temperature modeling indicate that Reclamation's proposed water temperature management action under Alternative 1 generally provides better water temperature conditions for winter-run and spring-run eggs and embryos in the subsequent summer and fall than the No Action Alternative (see EIS Chapter 5, Section 5.9.1.2, Sacramento River). See Appendix O, Section O.3.3.2, Sacramento River, for additional

Ltr#	Cmt#	Comment	Response
			discussion of potential changes to aquatic resources in the Sacramento River from Shasta cold water pool management. Also see Master Response 7 for additional discussion regarding the need for balancing benefits from enhanced storage for cold water pool management with water needs of other life history stages.
5	6	Section 3.4.1.4 – Upper Sacramento River, Fall and Winter Refill and Redd Maintenance The Project Description states: "Under Alternative 1, Reclamation would rebuild storage and coldwater pool for the subsequent year. Maintaining releases to keep late spawning Winter-Run Chinook Salmon redds underwater may drawdown storage necessary for temperature management in a subsequent year. Reclamation would minimize effects with a risk analysis of the remaining Winter-Run Chinook Salmon redds, the probability of sufficient coldwater in a subsequent year, and a conservative distribution and timing of subsequent Winter-Run Chinook Salmon redds. Maintaining releases to keep late spawning winter-run Chinook salmon redds under water is critical to minimizing take and maintaining life-history diversity. Estimating hydrologic conditions for the following water year in the fall is problematic. Water year types are defined by DWR's forecast of the volume of unimpaired inflow. The forecast is published in Bulletin 120 the second week of February, March, April, and May. Therefore, an estimation of hydrologic conditions should not be made until at least the end of January. Finally, we [CDFW] suggest including end of September Shasta storage levels in the risk-analysis of maintaining Keswick releases to keep winter-run Chinook salmon redds under water.	This comment addresses similar concerns to those addressed in Comments 5-3 and 5-5; however, this comment additionally discusses the difficulty of predicting hydrologic conditions in the following year from conditions in October of the previous year. Reclamation acknowledges this difficulty and notes that decisions about releasing flow in late October are based in part on the amount of storage that remains in the fall, including the end of September storage levels (as discussed in Section 3.4.1.4 Fall and Winter Refill and Redd Maintenance). See Appendix O, Section O.3.3.2, Sacramento River, for additional discussion of potential changes to aquatic resources in the Sacramento River from fall and winter refill and redd maintenance actions. Also see Master Response 7 for additional discussion regarding the need for balancing benefits from enhanced storage for cold water pool management with water needs of other life history stages.
5	7	Section 3.4.1.5 – Upper Sacramento River, Additional Operations Components The Project Description references rice decomposition smoothing as a component that could "increase water deliveries and protect listed fish." Please revise this component to include the specific timeframes when this component would be implemented. Based on CDFW monitoring data, 75% of fall-run Chinook salmon redds are constructed by October 31. One hundred percent of Sacramento River spring-run Chinook salmon spawn prior to October 31 and their eggs have not hatched and alevins do not emerge prior to October 31. As a result, the benefits of this component for listed species and species of special concern depend on the timing of implementation.	The rice decomposition action would result in taking demands of upstream Sacramento Valley CVP contractors and Sacramento River Settlement Contractors that are currently in October and spreading them across both October and November. The timing of rice decomposition smoothing has been added to the EIS Chapter 3, Section 3.4.1.5, Additional Operations Components.

Ltr#	Cmt#	Comment	Response
5	8	Alternative 1 proposes to implement a downstream trap and haul strategy in Tier 4 coldwater pool management years to benefit juvenile Chinook salmon and steelhead. However, trap and haul is known to cause stress and increased mortality in juvenile Chinook salmon and steelhead.	This comment notes that Lindley et al. (2007) identified hatchery production as a potential extinction risk factor for Central Valley salmonids. Reclamation acknowledges this risk and addresses it in Appendix O, Section O.2.4.3.5 Hatcheries. However, Lindley et al. (2007) note that with respect to winter-run Chinook salmon produced at the Livingston Stone National Fish Hatchery, extinction risk from hatchery production is minimized by restricting the percentage of hatchery produced fish in the population of natural spawners to less than 5% and by making hatchery releases in occasional years only. Reclamation would seek to conform to these restrictions any time they sought to increase hatchery releases. They would develop any hatchery release plans in coordination with NMFS and USFWS.
5	9	Alternative 1 proposes to implement a downstream trap and haul strategy in Tier 4 coldwater pool management years to benefit juvenile Chinook salmon and steelhead. However, trap and haul is known to cause stress and increased mortality in juvenile Chinook salmon and steelhead.	Reclamation acknowledges that trap and haul causes increased stress and mortality. However, trap and haul would be used only if risk of mortality from low flows and high water temperatures under natural migration conditions for juveniles was judged to be greater than that expected from trap and haul. Sections O.3.4.1.6 through O.3.4.1.9 in Appendix O discuss the risks of trap and haul for Chinook salmon and steelhead.
5	10	Section 3.4.4.5 – American River Division, Intervention Components The Project Description states: Alternative 1 would include improvements to Nimbus Fish Hatchery to improve management. Reclamation would complete a Hatchery Genetics Management Plan for Steelhead and a Hatchery Management Plan for Fall-run Chinook Salmon as part of Nimbus Fish Hatchery management. Reclamation would work with CDFW and NMFS to establish clear goals, appropriate time horizons, and reasonable cost estimates for this effort. Draft Hatchery Genetics Management Plans (HGMPs) have been developed for steelhead and fall-run Chinook salmon at Nimbus Hatchery. Both plans are outdated and incomplete. We [CDFW] recommend Reclamation work closely with NMFS and CDFW to provide appropriate funding to ensure development of final HGMPs that are adequate and contain the most current information.	Reclamation recognizes that the CDFW and NMFS are key stakeholders for the operation of the Nimbus Hatchery. Thus, Reclamation will work with these two parties on any planned improvements to the facility and development of a HGMP to ensure that these projects are funded appropriately, that current information is used to support the HGMPs, and that management objectives, ESA requirements and objectives are met and incorporated into the development of these two actions.
5	11	Section 3.4.5.1 Delta Cross Channel The Project Description proposes to operate the Delta Cross Channel (DCC) gates similar to current operations from October 1 through November 30, however the response time to close the DCC gates following fish triggers	Please see response to comment 5-12 regarding minimization of effects to salmonids and other sensitive fishes during DCC operations.

Ltr#	Cmt#	Comment	Response
		(based on the Knights Landing Catch Index or Sacramento Catch Index) has increased from 24 to 48 hours. Open DCC gates during this time period can cause migration delays for adult green sturgeon, and route juvenile winter-run Chinook salmon, steelhead, and green sturgeon into the interior Delta, increasing transit times to the western Delta and increasing entrainment risk.	The increase gate closure time from 24 to 48 hours is to accommodate necessary time for public affairs to send press releases notifying the recreational and local community that utilize the Delta Cross Channel for navigation through the Delta. Also, travel time from Knights Landing to the DCC is typically greater than 24 hours in the fall and fish triggers in the lower Sacramento River do not mean that fish arrive there in 24 hours.
5	12	From December 1 to January 31, the Project Description would consider opening the DCC gates for up to 5 days for up to two events. Under current operations, the gates are closed during this time period except for very limited time periods for experiments approved by NMFS and water quality compliance. Opening DCC gates during the December 1 to January 31 time period can cause migration delays for adult winter- and spring-run Chinook salmon and green sturgeon, and route juvenile winter- and spring run Chinook salmon, steelhead, and green sturgeon into the interior Delta, increasing transit times to the western Delta and entrainment risk. CDFW recommends reevaluating these proposed changes to DCC gate operations during both time periods to minimize impacts to, and potential take of, adult and juvenile salmonids and sturgeon.	Please refer to Section 3.4.5.1, Delta Cross Channel, for description of gate operations between December 1 to January 31. Delta Cross Channel operations under Alternative 1 are changed to allow Reclamation to predict water quality exceedances and open the DCC if D-1641 criteria are predicted to be exceeded, in drought conditions. This could result in greater opening times of the DCC. However, as described in the EIS at Section 3.4.5.1, should opening be considered during this period to avoid D-1641 water quality exceedances, “Reclamation and DWR would coordinate with USFWS, NMFS, and the SWRCB on how to balance D-1641 water quality and ESA-listed fish requirements.” Additional detail on the considerations involved in determining if gate opening would occur and if fish responses may be altered by DCC operations are described in Section 3.4.5.1. This coordination with agencies and consideration of monitoring information would work to minimize effects on salmonids and sturgeon.
5	13	Section 3.4.5.6.1 Bay-Delta, Onset of Old and Middle River (OMR) Management It is essential to clearly articulate membership in all real-time operations groups and decision-making authorities to understand the context for operations decision making under Alternative 1. We [CDFW] suggest assigning final decision-making authority to the agencies responsible for issuing take authorization under the federal and state endangered species acts, USFWS, NMFS and CDFW to ensure the minimization of species impacts attributed to the measure is realized. In our comments below we note portions of the Draft EIS where the decision-making process and associated criteria are unclear.	Please see Chapter 3, Section 3.4.5.6.5, Real-Time Decision-Making and Salvage Thresholds of the EIS for a description of the decision-making authority. The Federal Lead Agency (Reclamation) and Applicant (DWR) are responsible for operating the CVP and SWP. Reclamation will retain discretion on how to best comply with existing laws, including the ESA. Please see Master Response 2, Related Regulatory Processes regarding Reclamation’s compliance with ESA requirements through the Section 7 consultation process.
5	14	Section 3.4.5.6.2 Bay-Delta, Additional Real-Time OMR Restrictions and Performance Objectives Turbidity Bridge Avoidance: This measure is described as a means to reduce the impacts of SWP/CVP activities on Delta smelt. We [CDFW] suggest refining the wording of the "Turbidity Bridge Avoidance" criteria to more clearly explain key steps in the decision-making process and remove qualitative	The main real-time monitoring program that would be anticipated to be used for assessing fish distribution for Turbidity Bridge Avoidance would be the Enhanced Delta Smelt Monitoring Program. With respect to what is considered a “damaging level of entrainment”, the DEIS has been revised for clarity.

Ltr#	Cmt#	Comment	Response
		triggers and off-ramps such as a "damaging level of entrainment." Such changes are necessary for an accurate analysis of Project impacts and an understanding of the extent to which this criteria will be implemented to minimize impacts. For example, please describe the process Reclamation and DWR would use to "determine that real-time OMR restrictions were not required to avoid damaging levels of entrainment." What real-time monitoring programs would be analyzed? How would monitoring results be incorporated into an effects analysis? What is the number of fish, or proportion of the estimated population size, that would be considered a "damaging level of entrainment"?	Please see Section 4.10.5.10.2 of the EIS for revised descriptions of turbidity bridge avoidance under Alternative 1.
5	15	Single-Year Salvage Threshold: The EIS describes the single-year salvage threshold based on annual loss as a criteria to reduce Project impacts to winter-run Chinook salmon and wild steelhead. Please revise the wording in this section to provide additional specificity and quantifiable thresholds to facilitate decision making in real-time.	Please see the single year loss threshold information in the updated EIS at Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, and in the updated Appendix D, Alternatives Development Technical Memorandum, at Section 4.3.6.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, that includes specific, quantifiable thresholds.
5	16	To facilitate implementation of the Project Description we [CDFW] suggest adding a clear definition of "loss", as well as the formula used to calculate the single-year loss threshold, that would be used during real-time operations.	Please refer to EIS Chapter 3, Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, for a description of the Single-Year Salvage Threshold. Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Formulation, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations. CDFW has developed, maintains, and calculated loss for Reclamation on a daily basis. The formula used by DFW for calculating loss at the link: ftp://ftp.dfg.ca.gov/salvage/Salmon%20Loss%20Estimation/
5	17	We [CDFW] suggest including quantifiable loss thresholds for each species listed. As the criteria is written in the Draft EIS, it is not clear whether the wild winter-run Chinook salmon threshold is intended to be linked to the annual population size (e.g. 1.18% of the JPE using length at date criteria), or is a static threshold based on 90% of the 2010-2018 maximum loss of 3924 fish. The measure's effectiveness in minimizing impacts would differ depending on the threshold identified, with the former being a more effective approach. Please include the proposed loss thresholds for each species/run as absolute numbers or percentages of population size, in a table.	Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Formulation, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations. Please refer to EIS Chapter 3, Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, for a description of the Single-Year Salvage Threshold and cumulative loss threshold values for salmonids. The loss threshold values and additional description of loss thresholds are also provided in the updated Appendix D at Section 4.3.6.6.2, Additional Real-Time

Ltr#	Cmt#	Comment	Response
			OMR Restrictions and Performance Objectives. These thresholds were based on NMFS and USBR calculated loss estimates from 2009-2018.
5	18	The proposed single-year salvage thresholds do not include Delta smelt, spring-run Chinook salmon, or hatchery steelhead, all of which are also impacted by the Project. We [CDFW] suggest including a loss threshold for Delta smelt and spring-run Chinook salmon in addition to winter-run and steelhead. For example, a Delta smelt loss threshold could be calculated each year using the average of the Fall Mid-Water Trawl (FMWT) index in the preceding three years. Establishing a loss threshold based on recent years FMWT indices would ensure that the threshold reflects changes in Delta smelt abundance in the recent past.	Delta smelt salvage is managed by the FWS incidental take statement regarding environmental surrogates for salvage. Spring run Chinook and hatchery steelhead loss are not minimized through the single year salvage thresholds, only through the NMFS BO incidental take statement. New science will be collected on spring run Chinook surrogate coded wire tag groups during the late winter and early spring and used in the built-in review panels to potentially update the single year loss thresholds and incidental take statement, as appropriate.
5	19	Please provide additional details describing the intent of proposed "risk assessments" and potential criteria that would be used as the decision-tool for each assessment. If it is not possible to add objective decision-making criteria to the description of risk assessments at this time, we [CDFW] suggest requiring CDFW, NMFS and USFWS approval before implementing an off-ramp from OMR restrictions triggered by the loss threshold.	Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Formulation, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations. Please refer to the EIS at Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, for a description of the single-year loss threshold. As described in Section 3.4.5.6.2, if Reclamation and DWR exceed 50% of the annual loss threshold, a risk assessment would be conducted to determine if OMR restrictions are required to benefit fish movement, based on real-time information. See specific criteria to be considered in the updated EIS at Section 3.4.5.6.2 and in the updated Appendix D at Section 4.3.6.6.2, Additional Real-Time OMR Restrictions and Performance Objectives. These include real time monitoring, historical trends, salvage, relevant environmental thresholds. Risk assessments will be considered to evaluate whether risk is likely to affect fish behavior and increases the likelihood to exceed the next single-year loss threshold.
5	20	Please provide the equation that will be used to calculate the cumulative loss threshold and a number establishing the cumulative loss threshold based on data from 2010-2018.	Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Formulation, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations. Please refer to EIS Chapter 3, Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, for a description of the cumulative loss threshold.

Ltr#	Cmt#	Comment	Response
			Please see cumulative loss threshold values in the updated EIS at Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, and in the updated Appendix D at Section 4.3.6.6.2, Additional Real-Time OMR Restrictions and Performance Objectives.
5	21	Salvage triggers, such as those required in Action IV.3 of the 2009 NMFS Biological Opinion, in addition to the annual loss thresholds, should be considered as a means to minimize take of listed species in real-time based on observations of fish in the SWP/CVP salvage facilities. If salvage triggers are used to implement short term reductions in operations, they can effectively minimize entrainment by temporarily altering the hydrology of the south Delta, enabling fish to migrate through the central and south Delta out of the zone of influence of the facilities.	The actions described in Alternative 1 do not aim to minimize take of listed species based on daily information, but instead use observed data during a period when take was minimized to a level considered to avoid jeopardy (2009-2018) to develop cumulative and single year loss thresholds. The conceptual model described here does not fit many of the recent findings of the Collaborative Science and Adaptive Management Program (CSAMP) and other collaborative science and modeling venues regarding the Central and south Delta.
5	22	Section 3.4.5.6.3 Bay-Delta, Storm-Related OMR Flexibility We [CDFW] suggest revising this section to establish quantifiable criteria that would be used as on-ramps and off-ramps for storm operations. As currently drafted, the Project Description does not allow for a meaningful evaluation of potential impacts to species from storm operations because it is unclear under what scenarios storm operations would be pursued, how long they might last, and the extent to which storm operations would influence entrainment risk and OMR flows.	The updated description of Alternative 1 in the EIS at Section 3.4.5.6.3, Storm-Related OMR Flexibility, and in Appendix D, Section 4.3.6.6.3, Storm-Related OMR Flexibility, explains that storm operation would not be pursued when adverse effects are possible, including consideration of risk assessments that reflect an assessment of negative OMR effect on facility loss. The storm-related OMR flexibility is not specific to duration because conditions are monitored to avoid additional adverse effects.
5	23	We [CDFW] suggest providing operational limits in terms of OMR flows, not exports at the SWP and CVP south Delta facilities. For example, limiting storm operations to an OMR of -6000 cfs on a 5-day running average for the duration of a storm event would provide a clearer link between proposed operations and potential impacts to listed species and species of special concern as a result of entrainment.	Hydrologic conditions during individual storm events differ uniquely in magnitude, timing, and duration. The risks of proposed operations and potential impacts to listed species as a result of entrainment will vary based on these conditions in different regions, not just Old and Middle River. The risks from hydrologic alteration caused by modified exports during a storm event will vary and be evaluated for OMR and other portions of the South Delta.
5	24	We [CDFW] suggest including limits on the duration of storm operations based on observations of storm events in the recent past. Please use an analysis of prior water years to establish a maximum number of days per storm event when OMR flows would be allowed to exceed -5000 cfs.	Hydrologic conditions during individual storm events differ uniquely in magnitude, timing, and duration. The risks of proposed operations and potential impacts to listed species as a result of entrainment will vary based on these conditions in different regions, not just Old and Middle River. The risks from hydrologic alteration caused by modified exports during a storm event will be evaluated for the duration for when OMR flows will be allowed to exceed -5000.
5	25	Please add quantifiable on-ramps based on observed changes in hydrology. For example, changes in flows at Freeport could be an appropriate indicator of changes in hydrology at the beginning of a storm event.	Reclamation expects to consider Freeport flows and turbidity to evaluate whether an integrated early winter pulse protection action is warranted. If so, these data would restrict pursuit of storm-related OMR flexibility.

Ltr#	Cmt#	Comment	Response
5	26	Please provide a description of operations after an additional OMR restriction (ex. turbidity and loss thresholds) triggers an off-ramp from storm operations. We [CDFW] suggest revising the text to clearly explain that an off-ramp from storm operations would result in an increase in OMR flows as required by each “Additional Real- Time OMR Restriction”. For example, a 50% wild winter run Chinook annual loss trigger would result in an OMR flow limit no more negative than -3500 cfs.	See the updated EIS at Section 3.4.5.6, Old and Middle River Management, and the updated Appendix D at Section 4.3.6.6, OMR Management, for description of operation after an additional OMR restriction due to loss thresholds. This also describes the risk assessment and when a risk assessment may indicate a less negative OMR is no longer necessary.
5	27	Section 3.4.5.8 Bay-Delta, Delta Smelt Summer-Fall Habitat We [CDFW] suggest revising this portion of the Project Description to provide additional specificity regarding decision making processes, operational off-ramps, and biological goals and criteria. It is unclear whether the proposed summer-fall action allows for flexibility in real-time in response to changes in temperature or other conditions that weren’t anticipated during annual planning, to manage conditions and ensure that overarching biological goals will be met.	With respect to revising the description, please see responses to comments 28 through 33 for specifics. Given that a key environmental objective is to maintain low salinity habitat in Suisun Marsh and Grizzly Bay when water temperatures are suitable, it is reasonable to assume that there would be sufficient flexibility in real-time operations to account for temperature suitability in Delta Smelt habitat, for example.
5	28	Please provide a justification for the proposed salinity limit of 6 ppt at Belden’s Landing. We [CDFW] suggest analyzing the potential benefits associated with lower salinity limits at Belden’s Landing, such as 3 or 4 ppt, or shifting the salinity compliance point downstream of Belden’s Landing. Lower limits or a downstream compliance point are likely to provide additional benefits to Delta smelt by improving habitat quality in Grizzly Bay.	As described in Chapter 3, Alternatives, Section 3.4.5.8, Delta Smelt Summer-fall Habitat, the DEIS actually suggests “0-6 ppt at Hunter’s Cut” as a potential component for the Delta Smelt Summer-Fall Habitat action (DEIS, p.3-37). This is in accordance with the commenter’s suggestion to include a location downstream of Belden’s Landing.
5	29	We [CDFW] suggest adding quantifiable criteria for Delta smelt summer and fall habitat that would be used to select actions each year and gauge success over the long term.	It is anticipated that such criteria could be developed as part of the Summer-Fall Habitat Plan, for example. As described in Chapter 3, Alternatives, Section 3.4.5.8, Delta Smelt Summer-fall Habitat, Reclamation and DWR would develop a Summer-Fall Habitat Plan through a collaborative planning process to meet the environmental and biological goals in years when summer-fall habitat actions are triggered. Additionally, as described in the DEIS, Reclamation and DWR would propose a suite of actions that would meet the environmental and biological goals, based on discussions with USFWS.
5	30	Please remove vague caveats on proposed goals such as, “to the extent practicable.” These make it difficult to assess the limitations on the measure, and consequently its effectiveness in minimizing Project impacts.	It is anticipated that development of Summer-Fall Habitat Plan would allow the limitations on the measure to be assessed in the context of the prevailing conditions occurring in years when the summer-fall habitat actions are triggered, including the practicability of achieving objectives.
5	31	We [CDFW] suggest establishing a baseline for modeling comparisons that is representative of full implementation of Action 4 as written in the 2008	The comment is noted. As described in Chapter 3, Alternatives, Section 3.3, No Action Alternative, Section 3.3.5, Bay Delta, and in Appendix O, Section O.3.3.8, Bay-Delta, modeling comparisons included in the effects analyses such

Ltr#	Cmt#	Comment	Response
		USFWS Biological Opinion. To our knowledge, 2011 is the only wet year after 2008 when an average X2 at 74 km was achieved in September and October.	as the BA include a baseline with full implementation of Action 4 as written in the 2008 USFWS Biological Opinion. Comparisons for development of the Summer-Fall Habitat Plan under the Proposed Alternative could appropriately consider adaptive management of Action 4 as occurred in 2017, for example; note also that X2 in September 2011 averaged 75.3 km per DAYFLOW.
5	32	Please explain how the benefits provided by planned Delta smelt restoration projects, including Tule Red, would be affected as a result of the Project.	Consideration of potential effects to Tule Red and other such restoration projects would be expected to be undertaken as part of development of proposed Summer-Fall Habitat Plan under Alternative 1, wherein consideration would be given to meeting goals such as overlapping the low salinity zone with turbid water and available food supplies when water temperatures are suitable, for example.
5	33	We [CDFW] suggest eliminating the off-ramps listed on page 3-37 of the Draft EIS. As written, they could undermine the effectiveness of this measure in wet, above normal, and below normal years. For example: It is unclear what conditions would be deemed "sufficient habitat acreages in Suisun Marsh, Grizzly Bay, and other adjacent areas". The second off-ramp could be useful on a longer timeframe as a part of an adaptive management process, but it is not appropriate for real time decision-making. The third off-ramp relies too heavily on survey data to accurately predict absence of a very rare species. Additionally, the meaning of "other factors that would limit the benefits of the action" is not clear. Appendix D, Section D1.2.6.5.1 Delta Smelt Conservation Hatchery The Project Description proposes to operate a conservation hatchery for Delta smelt to supplement the declining wild population with genetically equivalent hatchery-origin individuals. Currently, a refuge Delta smelt population is maintained at the UC Davis Fish Culture and Conservation Laboratory (FCCL), with a portion of this population held at the Livingstone National Fishery Hatchery. The captive breeding program at FCCL follows an intensive genetic management plan designed to maintain genetic diversity and minimize kinship among captive fish. Since FCCL production capacity is currently too restrictive for a successful supplementation program, the project aims to construct a full-scale facility dedicated to Delta smelt propagation by 2030. A Hatchery Genetic Management Plan will be developed from the current FCCL genetic management model to further minimize hatchery domestication complications. CDFW has the following concerns regarding the proposal to construct a conservation hatchery:	With respect to the first offramp, the sufficiency of habitat acreages would be expected to be developed as part of Summer-Fall Habitat Plan proposed under Alternative 1 ; development of such plans would be expected to incorporate the most current information (e.g., available research studies) about what quantity and quality of habitat acreage may be sufficient for supporting recruitment. With respect to the second offramp, it is reasonable to assume that the utility of this offramp would emerge on a longer timeframe as continuing investigation into factors affecting Delta Smelt and continued development of Delta Smelt life cycle modeling occur, ultimately potentially informing use for consideration in operations at the seasonal level in wet and above normal water years. With respect to the third offramp, survey data form one potential means of assessing the offramp; the meaning of other factors is stated in parentheses, i.e., lack of suitable habitat based on modeling. As noted on p.3-38 of the DEIS, the offramp criteria would be more fully defined and examples of potential implementation developed through the structured decision making or other review process. The review would include selection of appropriate models, sampling programs, and other information to be used. The specific offramp criteria may be modified through the process. The process would be completed prior to implementation and may be improved in subsequent years as additional information is synthesized and reviewed.

Ltr#	Cmt#	Comment	Response
		- Recent evidence for potential adaptation to hatchery conditions: The FCCL's genetic management plan is rigorous and designed to minimize hatchery domestication. However, Finger et al. (2018) showed that the relative reproductive success of pair crosses between two cultured parents is higher than that of pair crosses between a wild and a cultured parent. This relative reproductive success of pair crosses with two cultured parents has increased since the inception of the genetic management plan, indicating a potential increase in domestication of the refuge population over time. - The genetic management plan at FCCL relies on supplementation of wild individuals every year to maintain genetic diversity: The EIS states that approximately 100 wild Delta smelt are captured every year to supplement the current refuge population at FCCL. Given recent declines in the wild population size, it has been increasingly difficult to capture 100 wild individuals. The Project Description aims to complete construction of the Conservation Hatchery in 2030. The EIS should include an analysis that evaluates the consequences of capturing insufficient numbers of wild Delta smelt for long term hatchery production to support a supplementation program. Fitness of hatchery fish in the wild is unknown: IEP-MAST (2015) has hypothesized that the limited habitat availability in the Delta has contributed to the recent decline in Delta smelt population sizes. The EIS should include an analysis of the habitat suitability for Delta smelt released~ back into the Delta. The effects of potential hatchery domestication should also be considered in this analysis (Finger et al. 2018).	
5	34	Section 3.4.6.1 – Stanislaus River, Seasonal Operations The Project Description proposes to operate New Melones Reservoir according to a Stepped Release Plan (SRP) as described in Table 3.4-6. The SRP would use the San Joaquin 60-20-20 Index rather than the currently used New Melones Index to determine water year type. This would result in a shift in the distribution of water year types in the proposed project versus current operations and downgrading the two highest flow schedules as compared to requirements established in the 2009 NMFS Biological Opinion. Specifically, water years currently classified as above normal and below normal would be classified as wet and above normal years, respectively, under the Project Description, resulting in reduced flows. These changes in the flow schedules are likely to impact San Joaquin spring-run Chinook salmon and steelhead, resulting in reduced reproductive success during spawning, reduced survival	Reclamation acknowledges the change in water year type classification and related concern regarding flow scheduling. Refer to Chapter 5, Environmental Consequences, Section 5.9.1.5, Stanislaus River, and to Appendix O, Section O.3.3.6, Stanislaus River, for discussions of potential effects to salmonid populations resulting from changes in water operations on the Stanislaus River. The changes specifically do not occur during critical water years such as dry and critically dry conditions. The shift is also relatively minor and the surrounding hydrologic conditions during the water year types of concern would generally offset the stated species-specific lifestage environmental concerns. During the stated water year types, cooler ambient temperature and atmospheric precipitation maintain the river through run-off in addition to New Melones releases, resulting in greater potential for embryo survival and outmigrant success. A shift during dry or critically dry years would have a

Ltr#	Cmt#	Comment	Response
		during embryo incubation, and reduced survival and growth of juveniles and emigrating smolt. Changes in flows may also restrict the window of successful outmigration of San Joaquin spring-run Chinook salmon, potentially reducing the diversity of outmigration timing strategies within the population.	greater potential for a significant effect, but the current shift is outside of those water year types. Additionally, as described in Section 5.9.1.5, there is a trade off between reduced flows in above normal/normal water years and increased coldwater pool in warm months/more critical lower water year types that may be used to benefit salmonids by lowering water temperatures downstream.
5	35	Temperature and dissolved oxygen management is critical for the success of steelhead and rainbow trout on the Stanislaus River. The Project Description does not propose to manage coldwater releases from New Melones Reservoir to meet temperature criteria currently required by the 2009 NMFS Biological Opinion. Without specific temperature criteria, steelhead will be subject to warmer water temperatures unsuitable for egg through smolt stages and potentially as adults. Increased water temperatures will reduce habitat quality and quantity and create competition between juveniles for rearing habitat. Additionally, the Project Description proposes to shift the existing State Water Resources Control Board Water Right Decision 1422 (D-1422) dissolved oxygen compliance point from Ripon to Orange Blossom. As a result of this change dissolved oxygen will be lower in nearly 30 river miles (between river miles 19 and 46) on the Stanislaus River under Alternative 1 than the No Action Alternative. This decrease in dissolved oxygen will result in levels that are suboptimal for rainbow trout and steelhead, reducing their available summer rearing habitat (as well as spring-run Chinook salmon) substantially on the Stanislaus River.	Please refer to Chapter 5, Environmental Consequences, Section 5.9.1.5, Stanislaus River, and to Appendix O, Section O.3.3.6, Stanislaus River, regarding potential changes to aquatic resources due to changes to the compliance point and changes to temperature and dissolved oxygen. The location of the water quality compliance point correlates with primary spawning and rearing activity. Shifting the compliance point would not necessarily result in poor conditions in the Stanislaus River. As described in Appendix O, Section O.3.12, Summary of Impacts, moving the compliance point to Orange Blossom Bridge under Alternative 1 would result in increased storage and a larger coldwater pool which would potentially offset stream temperature warming or delay warming water due to greater reserves of stored coldwater. Given the size of the O. mykiss population in the Stanislaus River (resident and anadromous), there has not been shown any evidence that water quality is creating a limiting factor for summer rearing where it occurs. There is substantial available habitat for both spawning and rearing. As described in Appendix O, Section O.2.8.2, Fish in the Stanislaus River, historically, Spring-Run Chinook Salmon were believed to be the primary Salmon run in the Stanislaus River; however, native Spring-Run Chinook Salmon have been extirpated from tributaries to the San Joaquin River (NMFS 2014c). Adult spring-run Chinook salmon, when infrequently present in the Stanislaus River in relatively smaller numbers, arrive during spring high-flow conditions and migrate high into the watershed to hold over summer. The potential for a negative impact on adult spring-run Chinook salmon due to poor temperature or dissolved oxygen conditions is not likely, as discussed above. In addition, the stated concerns are specific to locations lower in the watershed and less likely to overlap with the occurrence of spring-run Chinook.
5	36	Appendix D, Section D1.2.6.5.1 Delta Smelt Conservation Hatchery The Project Description proposes to operate a conservation hatchery for Delta smelt to supplement the declining wild population with genetically equivalent hatchery-origin individuals. Currently, a refuge Delta smelt population is maintained at the UC Davis Fish Culture and Conservation Laboratory (FCCL),	With respect to the commenter's assertion that "it has been increasingly difficult to capture 100 wild individuals", it is unclear what the basis for this statement is; such a statement is not made in the DEIS, nor is suggested as being an issue of concern in the Finger et al. (2018) paper that the commenter cites, which notes that wild broodstock collection may be only a fraction of

Ltr#	Cmt#	Comment	Response
		with a portion of this population held at the Livingstone National Fishery Hatchery. The captive breeding program at FCCL follows an intensive genetic management plan designed to maintain genetic diversity and minimize kinship among captive fish. Since FCCL production capacity is currently too restrictive for a successful supplementation program, the project aims to construct a full-scale facility dedicated to Delta smelt propagation by 2030. A Hatchery Genetic Management Plan will be developed from the current FCCL genetic management model to further minimize hatchery domestication complications. CDFW has the following concerns regarding the proposal to construct a conservation hatchery: - Recent evidence for potential adaptation to hatchery conditions: The FCCL's genetic management plan is rigorous and designed to minimize hatchery domestication. However, Finger et al. (2018) showed that the relative reproductive success of pair crosses between two cultured parents is higher than that of pair crosses between a wild and a cultured parent. This relative reproductive success of pair crosses with two cultured parents has increased since the inception of the genetic management plan, indicating a potential increase in domestication of the refuge population over time. - The genetic management plan at FCCL relies on supplementation of wild individuals every year to maintain genetic diversity: The EIS states that approximately 100 wild Delta smelt are captured every year to supplement the current refuge population at FCCL. Given recent declines in the wild population size, it has been increasingly difficult to capture 100 wild individuals. The Project Description aims to complete construction of the Conservation Hatchery in 2030. The EIS should include an analysis that evaluates the consequences of capturing insufficient numbers of wild Delta smelt for long term hatchery production to support a supplementation program. Fitness of hatchery fish in the wild is unknown: IEP-MAST (2015) has hypothesized that the limited habitat availability in the Delta has contributed to the recent decline in Delta smelt population sizes. The EIS should include an analysis of the habitat suitability for Delta smelt released~ back into the Delta. The effects of potential hatchery domestication should also be considered in this analysis (Finger et al. 2018).	total wild population size and that therefore there is no evidence of broodstock collection posing an immediate risk to the wild population (Finger et al. 2018, p.697). Therefore, the commenter's suggestion to include an analysis evaluating the consequence of capturing insufficient numbers of wild Delta Smelt for long term hatchery production to support a supplementation program does not appear warranted. With respect to the commenter's suggestion that the EIS should include an analysis of habitat suitability for Delta Smelt released into the Delta, analysis of habitat effects on Delta Smelt is included elsewhere in the DEIS (e.g., Section O.3.3.8.1 Delta Smelt); such effects would be expected to be relevant to both wild- and hatchery-origin Delta Smelt. It would be reasonable to assume that releases of hatchery-reared Delta Smelt could be made in targeted areas of suitable habitat. With respect to the commenter's concerns regarding hatchery domestication and need for analysis, the DEIS Appendix O notes that potential positive effects of the conservation hatchery are dependent on the implementation of various risk reduction strategies; these are discussed in more detail in the ROC LTO BA in the context of reintroduction from the Fish Conservation and Culture Laboratory (p.5-434 and p.5-436). The paper that the commenter cites with respect to evidence of domestication (Finger et al. 2018) also provides specific recommendations in rearing practices to reduce domestication, which it can be reasonably assumed would be considered as part of the overall risk reduction strategies outlined in the DEIS and ROC LTO BA.
5	37	CDFW appreciates the opportunity to comment on the Draft EIS to assist Reclamation in identifying and mitigating Project impacts on biological resources. Due to the issues presented in this letter, CDFW is concerned that	Responses to CDFW's specific concerns are addressed in the responses above.

Ltr#	Cmt#	Comment	Response
		the Draft EIS does not adequately identify or mitigate the Project's significant impacts on biological resources.	

Ltr#	Cmt#	Comment	Response
6	1	On behalf of the South Delta Water Agency I would like to request an extension of time by which to provide written comments to the DEIS for the above program. The operations of the CVP, especially the effects on San Joaquin River flows, water quality and water levels in the southern Delta adversely affect the diverters within the SDWA on an ongoing basis. The extent of the DEIS and its appendices requires significant amounts of time and gathering the necessary data to incorporate into comments cannot be effectively done by the current August 26 deadline. In addition, the proposed project may significantly change CVP operations which can affect many beneficial users of water as will likely be contrary to existing regulatory mandates. We therefore request an extension of time to submit our comments, no less than an additional 60 days. Please confirm whether or not such extension will be granted as soon as is possible.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, regarding the duration of the comment period.

Ltr#	Cmt#	Comment	Response
7	1	The Bureau of Reclamation and the U.S. Dept. of Interior should appreciate that the Chicken Ranch Rancheria Me-Wuk Indians (Tribe) has Tribal lands, which currently are unable to be served a reliable, secure water supply. These unmet Tribal water needs for water can best be resolved through obtaining water out of the historic Tribal watershed of the Stanislaus River. Tribal lands abut the Federal Reservation lands associated with New Melones Reservoir. Moreover, the Stanislaus River is the most proximate, feasible source of water readily available to meet Tribal needs. Water could be pumped out of New Melones near Tribal lands and made readily available for beneficial use by the Tribe. To accomplish delivery of water would require the use of pumps to lift the water out of New Melones Reservoir. Engineering analysis by the Tribe's engineering team indicates that two factors are of critical importance regarding the feasibility of such a system.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. This comment describes the importance of New Melones reservoir storage to the Chicken Ranch Rancheria Me-Wuk Indians (Tribe). The commenter’s analysis indicates that Alternatives 2 and 3 provide highest likelihood of water supply for the Tribe. This comment describes that all project Alternatives improve water supply for the Tribe. The pumping project mentioned in the comment is beyond the scope of the EIS and is not considered a reasonably foreseeable project in the cumulative analysis.

Ltr#	Cmt#	Comment	Response
		First, the lake level of New Melones is better when higher than lower. When lake levels go down, the lake surface "shrinks" thereby making the water both lower and farther away from Tribal lands. In short, as lake levels drop the water "runs away" from feasible access for the Tribe. Second, the carry-over storage in New Melones helps lake levels in the event of below normal, dry or critically dry years, or sequential years of those classifications. More carry-over is better than less carry-over. The Tribe has concluded that under the No Action Alternative (NAA) the Tribe, by using the most readily available and easily accessible point of delivery, would be able to pump water 60% of the time and conversely unable to pump water 40% of the time. However, in sequential below normal, dry and/or critically dry years it would be impossible for the Tribe to pump water for 8.8 years in a row. Having no water available for pumping for a nearly 9-year period is clearly unacceptable if what is being sought is a reliable Tribal water supply. Alternatives 1 & 4 are somewhat better. The Tribe would be able to pump water 77% of the time and conversely unable to pump water 23% of the time. However, in sequential below normal, dry and/or critically dry years it would still be impossible for the Tribe to pump water for 8.7 years in a row. This is also unacceptable performance to be considered a reliable water supply. Alternatives 2 & 3 are better for a Tribal water supply. The Tribe would be able to pump water 79% of the time and conversely unable to pump water 21 % of the time. Unfortunately, in sequential below normal, dry and/or critically dry years it would be impossible for the Tribe to pump water for 6.6 years in a row. Having no water deliveries for over 78 consecutive months is still a problematic water supply condition. The Tribe has however, determined that alternatives 2 & 3, combined with the closest pumping location would provide the most available supply opportunity from New Melones to the Tribal lands for most water year types. These two alternatives should also provide an opportunity to supply the Tribe with a critical water supply should there be any sort of water supply emergency within the area.	
7	2	We [Chicken Ranch Rancheria of Me-Wuk Indians] also wish to point out that modeling results indicate that the California State Water Resources Control Board's proposal for 40% UIF (Unimpaired Flows) for the Stanislaus River as part of the Update to the Water Quality Control Plan for the San Francisco Bay-	Please see response to comment 7-1. Please also see Master Response 1, Responses to General Comments, regarding the State Water Resources Control Board’s updates to the Bay-Delta Water Quality Control Plan.

Ltr#	Cmt#	Comment	Response
		Delta Estuary, is the worst alternative of all. Under the State Board's proposal, the Tribe would only be able to pump water out of New Melones Bay 58% of the time. Such a flow regime would impose a significant impact upon the Tribe's ability to obtain a reliable water supply directly from New Melones Bay and leave the Tribe without the ability to pump any water in 9+ sequential years. That is totally unacceptable to the Tribe's needs.	
7	3	It is Federal policy to consult on a government-to-government basis with federally recognized Tribal governments when their actions and decisions may affect Tribal interests. Consultation is a process of meaningful communications and coordination between Federal Agencies and Tribal officials prior to taking Federal actions or implementing decisions that may affect Tribes. "Today, there is nothing more important in Federal-Tribal relations than fostering true government-to-government relations to empower American Indians and Alaska Natives to improve their own lives, the lives of their children, and the generations to come . So, in our Nation's relations with Indian tribes, our first principle must be to respect the right of American Indians and Alaska Natives to self-determination. We must respect Native Americans' rights to choose for themselves their own way of life on their own lands according to their time honored cultures and traditions " [Footnotes 2: Executive Order 13175 - Consultation and Coordination with Indian Tribal Governments, Administration of William Jefferson Clinton, November 6, 2000]. The government-to-government communications and coordination process should include all relevant issues for a Tribe and its lands. Indian lands include all land within the limits of any Indian Reservation [Footnotes 3: The U.S. EPA's definition of "reservation" encompasses both formal reservations and “informal" reservations, i.e. trust lands set aside for Indian Tribes. Oklahoma Tax Commission v. Sac and Fox Nation, 508 U.S. 114, 123 (1993); 56 Fed. Reg. 64876, 64881 (1991); or 63 Fed. Reg. 7254, 7258(1998)] under the jurisdiction of the United States government, notwithstanding the issuance of any patent. This includes all dependent Indian communities [Footnotes 4: US EPA Policy on Consultation and Coordination with Indian Tribes, May 4, 2011] within the borders of the United States and means "Indian Country". Any Federal policies that have Tribal implications [Footnotes 5: "Policies that have tribal implications refers to regulations, legislative comments or proposed legislation and other policy statements or actions that have substantial direct effects on one or more Indian tribes, on the relationship between the Federal	Please refer to Chapter 6, Other NEPA Considerations, for information regarding the Tribal consultation activities that have been conducted. Chicken Ranch Rancheria of Me-Wuk Indians of California is recognized in Appendix J, Indian Trust Assets, as a federally recognized tribe in the vicinity of the study area.

Ltr#	Cmt#	Comment	Response
		Government and Indian Tribes ... " Executive Order 13175 - Consultation and Coordination with Indian Tribal Governments, Administration of William Jefferson Clinton, November 6, 2000] must comply with Executive Order 13175. Important issues relative to river flows, and many beneficial uses of water related to New Melones Reservoir are being framed and analyzed within the subject EIS. Any decision and in particular no action by the BOR, could alter the amounts of water available to the Tribe for beneficial uses. The Chicken Ranch Rancheria of Me-Wuk Indians are carrying out engineering and hydrology analysis of the Stanislaus River. The purpose of the analysis is to inform the Tribal Council on how best to acquire and develop the necessary water supplies to fulfill unmet Tribal water needs.Analysis conducted has informed the Tribe that the only viable source for that water is the Stanislaus River and the most proximate location is New Melones reservoir. Such actions as anticipated in the EIS could result in a substantial direct adverse effect on the future of the Chicken Ranch Rancheria of Me-Wuk Indians, not only for the present, but also for generations to come. It is the intent of our Tribe to achieve self-determination, in part; by securing a long-term sustainable and reliable water supply for our people and our lands from the Stanislaus River and New Melones Reservoir. We wish the BOR to recognize that no nation; no people and no Tribe can ever enjoy self-determination absent a secure water supply. The Chicken Ranch Rancheria of Me-Wuk Indians of California, therefore request that the ongoing government-to-government (BOR) consultation with the Tribe be expanded to include the issues raised in this letter. We look forward to discussing the improved operations of New Melones reservoir as one component of the long-term operations of the CVP and we encourage the BOR to select Alternative 2 or 3 as they represent the most favorable future condition for the Tribe.	
7	4	ATT1: Appendix A Chicken Ranch Rancheria of Me-Wuk Indians of CaliforniaTechnical Comments: Draft EIS, Updates to the Coordinated Long-Term Operation of the CVP and SWP and Related Facilities (EIS) Prepared by Avry Dotan, AD Consultants August 2019	This comment provides informational background for the comments provided later in this attachment. No additional response is required.

Ltr#	Cmt#	Comment	Response
7	5	ATT1: Exhibit 1: Figure 1 Pumping water to the Tribe [of Me-Wuk Indians] in normal and wet years in possible when New Melones storage exceeds ~1.1 Million AF	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	6	ATT1: Exhibit 2: Figure 2 Pumping water to the Tribe [of Me-Wuk Indians] in dry and critically dry years is impossible when New Melones storage drops below ~1.1 Million AF	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	7	ATT1: Exhibit 3: The Exceedance chart above shows the percent of the time pumping from New Melones is impossible (or possible). For Example - under the NAA, 40% of the time pumping is impossible and 60% of the time is possible	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	8	ATT1: Exhibit 4: Graph showing New Melones Reservoir Operation Storage levels will be improved under the EIS but would still prevent the Tribe from pumping in dry and critically dry years.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	9	ATT1: Exhibit 5: Table show Summary of Results of the EIS Pumping from NM to Tribe	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	10	ATT1: Exhibit 6: Graph showing New Melones Water Surface Elevation (ft) Comparing EIS Alt2 (&3) with SWRCB 40% UIF	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
7	11	ATT1: Conclusions 1. None of the EIS alternatives will enable the Tribe to pump water from New Melones bay 100% of the time. 2. Therefore, the Tribe would have to rely on pumping water downstream of New Melones Dam, or Tulloch in order to have a water supply for their people and land 100% of the time. 3. Alt2 {&3) appears to be significantly better than the NAA and slightly better than Altl (&4), as far as the ability of the Tribe to pump from New Melones bay. 4. The SWRCB 40% UIF significantly degrades the ability of the Tribe to pump water from the nearest bay in New Melones and thus is an unacceptable alternative for the Tribe. 5. It should be noted that the simulation period in the EIS terminates in 2003, which is 16 years ago. Although the sample size in the simulation period is quite large (83 years), it is unfortunate that the years with the most reliable data	Please refer to comment responses 7-1, 7-2 and 7-3. Please also refer to Master Response 6, Hydrologic Modeling and Surface Water Resources regarding how the alternatives were modeled using the best available information.

Ltr#	Cmt#	Comment	Response
		and that reflect the best the most recent climate conditions in the basin, are not being considered.	

Ltr#	Cmt#	Comment	Response
8	1	I am writing to request a one week extension to the public review period for the Draft EIS prepared to analyze the environmental impacts of potential modifications to the coordinated long-term operation of the Central Valley Project and State Water Project. State Water Resources Control Board staff have had limited opportunity to review the Draft EIS while participating in numerous ongoing planning activities in the watershed, and would benefit from an additional week to complete our review.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, regarding the duration of the comment period.

Ltr#	Cmt#	Comment	Response
9	1	[Yurok Tribe is] concerned that the DEIS only addresses issues of water supply and makes no effort to address the issues related to the demand side of the project. Many efforts have been made over the years to maximize water deliveries from the CVP, while species continue to be imperiled due to scarce water left in the system to meet the needs of the ecosystem.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The ROC on LTO EIS includes a No Action Alternative and 4 alternatives, which were developed to include different possible approaches to addressing listed species. Scoping comments were received suggesting demand side management, including reduction of waste and unreasonable use, improved agricultural and urban water use efficiency, desalinization, etc. These options were not incorporated into any of the alternatives, as they do not meet the purpose and need. The purpose and need does not consider the reduction of demands or how water is used after delivery, but Reclamation included alternatives, including Alternative 1, that is protective of endangered species and the ecosystem. Please also see Master Response 1, Responses to General Comments, regarding the purpose and need.
9	2	Scope of Project Area is Insufficient and Does Not Adequately Address Impacts to the Lower Klamath River The Yurok Tribe has specific concerns regarding the scope of the DEIS project area, the method by which water deliveries and environmental flows are allocated, and lack of an analysis that is thorough enough to ensure sufficient protection of Tribal Trust and ESA listed species of the Klamath River Basin. The impacts of the project on the Lower Klamath River are inadequately considered throughout the DEIS. Ln various sections (e.g. Section 2.3) of the document, the Lower Klamath River below the confluence with the Trinity River	Please refer to Section 3.3.2.2 and 3.3.2.3 regarding the analysis of the Trinity and Klamath Rivers.

Ltr#	Cmt#	Comment	Response
		is not included in the project area. While the Lower Klamath River is referred to in other sections (e.g. Section 4.1), it should be consistently included and analyzed throughout the document. The Trinity River Division trans-basin diversion has effects on the entire Klamath River basin downstream of the diversion, and therefore, the Lower Klamath River must be included in the project area. Failure to do so means that the environmental consequences of the proposed action are not adequately reviewed.	
9	3	The DEIS Overstates Flow Protections to the Trinity River The DEIS inaccurately describes the environmental flow allocations established by the 2000 Trinity River Mainstem Restoration Final EIS / Environmental Impact Report. The document states " the Trinity River ROD strictly limits Reclamation's trans-basin diversions to 55% of annual inflow on a 10-year average basis to meet legal and trust mandates for the restoration and protection of the Trinity River fishery" (Section 3.3.2.1). This overstates the protections to Trinity River flows because the diversions are not limited to 55% on a year-by-year basis. Instead, the Trinity River ROD allocates water volumes each year based on inflow to Trinity Reservoir above Lewiston Dam. While this was roughly equivalent to 55% of annual inflow on a 10-year average of the historic record, it is independent of decadal hydrology or management of the trans-basin diversion moving forward.	In response to your comment, the ROC EIS document Section 3.3.2.1 has been changed to state, "The Trinity River ROD provides variable annual instream flows for the Trinity River from the Trinity River Division based on forecasted hydrology for the Trinity River Basin as of April 1st of each year, ranging from 369,000 acre-feet (af) in critically dry years to 815,000 af in extremely wet years, to meet legal and trust mandates for the restoration and protection of the Trinity River fishery;…".
9	4	The Proposed Action Lacks Operational Flexibility for the Trinity River Division for Fish Protection The DEIS also states in Section 3.4; "The water allocation process for the CVP begins in the fall when Reclamation makes preliminary assessments of the next year's water supply possibilities, incorporating fall storage conditions combined with a range of forecasted hydrologic conditions. The initial allocation for SWP deliveries is made by December 1 of each year, with a conservative assumption of future precipitation to avoid over allocating water before the hydrologic conditions are well-defined for the year. As the water year unfolds, Central Valley hydrology and water supply delivery estimates are updated using measured and known information and conservative forecasts of future hydrology." To be protective of Trust and listed species these same measures must be extended to environmental flows on the Trinity River, as the same uncertainties exist for both allocations. Annual adjustments to environmental flows are currently not, which is after critical life stages of threatened and trust species have passed. Failure to consider annual adjustments to environmental flows as early as possible in the	Reclamation recognizes the many environmental uses for flows in the spring, including for spawning, egg incubation, juvenile rearing, and outmigration flow pulses, as well as hydrologic uncertainty in all watersheds. All alternatives include continuing to operate in accordance with the Trinity Record of Decision. Initial CVP and SWP allocations are made conservatively, usually based on the 90% exceedance forecast and thus generally result in increasing allocations over time in the spring of each year, as forecast certainty improves. Applying the same logic to flows under the TRRP could result in decreased TRRP flows early in the spring by using more conservative forecasts.

Ltr#	Cmt#	Comment	Response
		water year limits the overall ability for managers to meet the needs of, and facilitate the recovery of, BSA listed and tribal trust species.	
9	5	The DEIS Lacks Analyses That Determine Potential Operational and Environmental Effects from Reasonably Foreseeable Environmental Variability The Yurok Tribe strongly recommends that two additional analyses be included in the DEIS to disclose potential impacts of the operation of the project, or the DEIS is inadequate in its disclosure of effects. The DEIS states in Section 3 .3 .2.1, "Reclamation maintains at least 600 T AF [thousand acre-ft] in Trinity Reservoir, except during the I0- 15% of water years when Shasta Reservoir storage is very low." Should dry years occur consecutively, the Trinity Reservoir could drop below critical thresholds and cause devastating harm to Trinity River species downstream of Lewiston Dam, including adult spring Chinook holding below Lewiston dam due to depletion of the cold pool and subsequent high temperature water releases. There is information in a Reclamation report (Bender 2011), that suggests a minimum Trinity Reservoir pool of 1,000 to 1, I 00 TAP would be more appropriate to be protective of species downstream of Lewiston Dam. Reclamation has made changes to be more protective of the cold water pool in Shasta Reservoir, however there is information supporting similar protective measures for the cold water pool in Trinity Reservoir are necessary, yet such changes for cold water pool volumes in Trinity Reservoir have not been proposed. The trans-basin di version should not be used to be protective of species in the Sacramento basin, if that action will put species of the Trinity Basin at risk.	As stated in Section O.3.2.1.1.1, "End-of-water-year carryover in dry and critically dry water year types is addressed on a case-by-case basis to help conserve cold-water pools and meet water temperature objectives on the upper Sacramento and Trinity Rivers..." Since this is done on a case by case basis, no operational flexibilities are built in to the model. In the modeling, the only time that instream flows are not met is when there is no storage to meet them, so this does result in storage being drawn below 600 TAF in less than 10% of years. Reclamation's changes in Alternative 1 to address Shasta cold water pool do not include a minimum storage level in Shasta Reservoir, but rather an optimization of available cold water pool to target the most critical time period of Winter-run Chinook salmon eggs. Multiple consecutive dry years could also result in harm to Sacramento River species downstream of Keswick Dam, including Winter-run Chinook salmon, due to depletion of cold water pool. A higher carryover storage target in Trinity Reservoir, or a dry year target, could have impacts to Sacramento River species or to the CVP by further reducing the water that can be diverted into the Sacramento River from the Trinity River. The ROC Alternative 1 does not reduce Trinity River flows below ROD volumes. Reclamation's Alternative 1 includes continuing to operate in accordance with the Trinity ROD.
9	6	The DEIS does not disclose how susceptible the project is to prolonged drought and what the impacts to the environment including the Trinity River would be should such a drought occur, By stating in Section 3.4.8.5 "On October 1st, if the prior water year was dry or critical, Reclamation would meet and confer with USFWS, NMFS, DWR, CDFW, and Sacramento River Settlement Contractors on voluntary measures to be considered if drought conditions continue into the following year, including measures that may be beyond Reclamation and DWR's discretion." Reclamation is acknowledging that a situation where drought and insufficiently protective water management associated with the proposed action could result in operations outside of what was analyzed. It is Reclamation's responsibility to analyze impacts that would result from that situation. For example, it is not possible to determine how many years of drought or severe drought would need to occur before the ability to provide protective temperatures and flows downstream of Lewiston Dam would be seriously compromised. We strongly recommend that analysis of a scenario where water year 2016 and 2017	Modeling for the No Action Alternative and each alternative uses a modified hydrology, based on 1922-2003 with projected climate change as of 2025. The 1929-1935, 1976-1977, and 1987-1992 droughts in the EIS modeling can provide an assessment of temperatures during droughts. According to CDEC, Trinity Lake storage dropped as low as 470 TAF in 2015. The lowest Trinity Reservoir storage in the model run is for 1932 in the No Action Alternative and Alternative 3, at 240 TAF. Several other years in the 1930s as well as 1977 are at or below 2015 Trinity Reservoir storage levels. Those years are the best proxies of 2015 behavior in the model run. In all Alternatives and the NAA, there is less than 10% chance of end of September storage being below 600 TAF, and the simulation includes multiple multi-year droughts. The modeling does not include representation of case-by-case drought policy decisions which could reduce (or increase) the change of end of September storage being below 600 TAF. However, an additional modeling run considering an extension of the 2014-

Ltr#	Cmt#	Comment	Response
		received the same level of precipitation as water year 2015 to assess and disclose how the drought stressed project would handle such an extended drought, and what the expected impacts would be to temperatures in the Trinity River.	2015 drought is not practical in the timeframe for several reasons. First of all, CalSim extends to 2003. Simulating 2014-2015 conditions and then an extension of that trend in the long term planning model would require updating the underlying model. Secondly, the model is not informed about changes to operational rules that would happen under drought conditions. This is a common model limitation for planning models as they operate to generalized rules. The model does not have generalized off-ramping rules during multi-year drought and the model continues to operate to the same rules each year until it runs out of water in drought periods. Accurate representation of drought periods would require implementing rules about potential off-ramps that would require case-by-case policy decisions that cannot be coded into a planning model as they are made in real-time
9	7	The DEIS Fails to Account for Proviso 2 Deliveries of Water to the Trinity River The critical failure to include the annual delivery of water established 111 Proviso 2 in Section 2 the Trinity River Division Act (Public Law 84386), in all analyses is a primary concern. This water contract, to be no less than 50 TAF annually, was established before the Trinity River Division of the CVP was constructed. Any analysis that claims to be considering LTO should include analyses of the impacts of delivering this contract water, which was guaranteed to downstream users by an act of Congress.	Reclamation determined that because there is no proposal for action related to Public Law 84386, there is insufficient information to evaluate potential effects.
9	8	Based on our initial review of the DEIS we believe that it does not adequately disclose the potential impacts of the project to tribal trust and ESA listed species. Existing laws and statues require recovery of Trinity and Klamath River basin fisheries resources to authorize continued operations of the trans-basin diversion. While efforts have been made to recover fisheries resources of the Trinity River basin, success in that venture has not been achieved. We ask that you correct the deficiencies of the DEIS and take appropriate actions to be protective of these resources.	As stated in the Trinity River Restoration Program ROD, "Congress passed legislation authorizing the Trinity River Division (TRD) on August 12, 1955 (Pub. L. No. 84-386) (1955 Act). Although Congress authorized the TRD as an integrated component of the CVP, section 2 of the 1955 Act specifically directed the Secretary of the Interior to ensure the preservation and propagation of fish and wildlife in the Trinity Basin through the adoption of appropriate measures. ... The 1981 Andrus Decision concluded that the statutory and trust obligations of the Department of the Interior compelled the restoration of the Trinity River anadromous fishery to pre-TRD levels. Therefore, Secretary Andrus directed the Service to complete a 12-year study which would assess the effectiveness of flow and habitat restoration efforts and make recommendations on measures necessary to address the fishery impacts attributable to the TRD consistent with the Department’s obligations. ... The Service and Hoopa Valley Tribe released the Trinity River Flow Evaluation Study (TRFES) in June 1999. The TRFES recommended specific annual flow releases, sediment management, and channel rehabilitation to create and sustain a dynamic alluvial channel

Ltr#	Cmt#	Comment	Response
			that will provide the necessary habitat. [The TRRP ROD] adopts the recommendations contained in the TRFES, is based on the extensive scientific studies contained in the TRFES, and is the most practical and scientifically based restoration strategy." All ROC on LTO alternatives include continuing to operate in accordance with the TRRP ROD.

Ltr#	Cmt#	Comment	Response
10	1	Section 3.4 – Alternative 1 (Preferred Alternative) Certain descriptions of the preferred alternative lack detail on how operations would comply with the SRS Contracts and other legal obligations. For example, the document does not specify how north-to south transfers will be addressed and how an expanded transfer window (July through November) would comply with State Water Resources Control Board (SWRCB) requirements. Additional specificity would minimize potential for incorrect implementation in the future.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, regarding the purpose and need. Section 3.4.5.4, Water Transfers, discusses that north-to-south transfers under Alternative 1.
10	2	[Page #] 3-20 [Section:] 3.4.1.3.1 [Title:] Summertime Cold Water Pool Management [Comment:] Last sentence of last paragraph in this section is incomplete.	The last sentence of the last paragraph has been revised.
10	3	[Page #] 3-23 [Section:] Table 3.4-2 [Comment:] Table should be clearly identified as example valuesthat will be refined later.	Clarifications to Table 3.4-2 headers have been added to address this comment.
10	4	[Page #] 3-23 [Section:] 3.4.1.5 [Title:] Additional Operations Components [Comment:] Rice Decomp Program should include language noting limitations due to water rights settlement contracts and Term 91 effects.	Reclamation is not proposing to modify water rights settlement or Term 91, however other factors could limit the ability to perform a more flexible rice decomp program.
10	5	[Page #] 3-25 [Section:] 3.4.2.1 [Title:] Clear Creek Flows [Comment:] The criteria for Clear Creek pulse flows in the winter and spring is based on the water year type. The water year type is not available until May	Text in this section has been updated in response to this comment.

Ltr#	Cmt#	Comment	Response
		and this should be modified to another trigger such as a forecasted water year type or perhaps a storage target.	
10	6	[Page #] 3-25 [Section:] 3.4.4 [Title:] American River Division [Comment:] Alternative 1 American River flows is based on a FMS dated 2017 while other alternatives are based on a FMS dated 2006. It is unknown if CalSIM and modeling correctly reflects differences in flow conditions.	Differences in flow conditions are based on assumptions provided in Appendix F Attachments 2-1 and 2-2.
10	7	[Page #] 3-27 [Section:] Table 3.4-3 [Comment:] It should be noted that Table 3.4-3, American River Ramping Rates is for fishery concerns and there are no limitations above 20,000 cfs.	Reclamation would ramp down releases in the American River below Nimbus Dam as shown in Table 3.4-3. Ramping rates would not apply during flood control or if needed for facility operational concerns. The working groups may also determine a need for a variance.
10	8	[Page #] 3-28 [Section:] 3.4.5.1 [Title:] Delta Cross Channel [Comment:] Second sentence in the paragraph references the wrong tables: Tables “3.4-3” and “3.4-4” should be “3.4-4” and “3.4-5.”	Text revised per comment.
10	9	[Page #] 3-28 [Section:] 3.4.5.1 [Title:] Delta Cross Channel [Comment:] The Draft EIS states that Reclamation would not open the DCC gates under certain fishery conditions, but this may not be consistent with Reclamation’s water rights. It might be better stated that Reclamation would coordinate with the SWRCB to operate the gates for fishery needs.	It is unclear where Alternative 1 would be determined inconsistent with Reclamation’s water rights. Reclamation intends to comply with all requirements of water right permits and to operate in compliance with all applicable state and Federal laws.
10	10	[Page #] 3-28 [Section:] 3.4.5.1 [Title:] Delta Cross Channel [Comment:] The Draft EIS states that Reclamation would close the DCC gates for 14 days in the May 21 to June 15 period and consider other factors including the Rio Vista flow objective. However, there is no flow objective at Rio Vista in May or June. Also, this states that Reclamation would deviate	Alternative 1 has been updated to clarify that Reclamation will evaluate the information collected to determine the timing and duration of the gate closure. Reclamation intends to comply with all requirements of water right permits and to operate in compliance with all applicable state and Federal laws.

Ltr#	Cmt#	Comment	Response
		operations and not open the gates if fishery concerns warrant. However, the SWRCB requirements may prevent Reclamation from changing operations.	
10	11	[Page #] 3-30 [Section:] 3.4.5.4 [Title:] Water Transfers [Comment:] The Draft EIS states that Reclamation and DWR would provide an extended transfer window from July through November. This is not solely at the discretion of Reclamation and DWR, and impacts to third parties would have to be considered and reviewed by the SWRCB. There could be water level or water quality concerns. See also App. D, p. 4-60, 4.3.6.4.	Water transfers, including an expanded transfer window, would be implemented consistent with applicable law and policies.
10	12	[Page #] 3-37 [Section:] 3.4.5.8 [Title:] Delta Smelt Summer-fall Habitat [Comment:] Operations to a 2 ppt isohaline line in September and October could have impacts to available supply and Term 91 conditions.	This comment is consistent with the analysis in the EIS. Impacts to water supply are discussed in Section 5.2 of the EIS and Appendix G, Water Quality Technical Appendix. Changes in operations due to this action as well as other release related actions have the potential to change when Term 91 goes into effect.
10	13	[Page #] 3-40 [Section:] 3.4.6.1 [Title:] Seasonal Operations [Comment:] Last sentence in last paragraph of the Seasonal Operation section indicates that Reclamation would move the 7.0 Dissolved Oxygen objective from Ripon to Orange Blossom. This action would require SWRCB action and is not within Reclamation’s discretion. See also App. D, p. 4-7, Table 4.1-1.	Reclamation agrees that this requires a SWRCB action.
10	14	[Page #] 3-42 [Section:] 3.4.8.5 [Title:] Drought and Dry Year Actions [Comment:] The SRS Contractors approved a resolution on July 25, 2019 that, among other things, confirms they will meet and confer with Reclamation, NMFS, and other appropriate agencies to determine if there is any role for the SRS Contractors in connection with Reclamation’s operational decision-making for Shasta Reservoir annual operations during drier water years, with operational conditions as described in Tier 3 and Tier 4. A copy of the resolution is attached hereto and incorporated herein in Appendix 1.	Section 3.4.8.5, Drought and Dry Year Actions is consistent with the attachment provided by the commenter.

Ltr#	Cmt#	Comment	Response
10	15	[Page #] 5-11 [Section:] 5.3.1.1 Also, App. H, p. H-19, H.2.4.1.1 [Title:] Sacramento, Feather, and American Rivers [Comment:] This paragraph indicates that modeling shows that the settlement contractors may see a reduction of less than 5% to their water supply under Alternatives 1, 2 and 3. The Draft EIS should clarify why this is occurring in the modeling and explain the likelihood that such effects will be experienced in the future.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding model assumptions and limitations.
10	16	Section 3.7 – Alternative 4 Alternative 4 describes a scenario to meet instream flow targets approaching 55% of unimpaired flow except under conditions that would constrain Reclamation's ability to meet coldwater pool storage targets. Specifically, Alternative 4 proposes that Reclamation would reduce instream flow releases in Shasta Critical years in order to maintain storage for coldwater pool. Draft EIS at pp. 3-49 – 3-50. It is unclear whether such a reduction would be consistent with unimpaired flow requirements that may be imposed by the SWRCB in the future. If it was made consistent with unimpaired flow scenarios proposed to date by the SWRCB, then Alternative 4 would fail to disclose or analyze the significant impacts that have been the subject of prior comments submitted to the SWRCB [State Water Resources Control Board] by the SRS [Sacramento River Settlement] Contractors and other Sacramento Valley water users. In this regard, enclosed and incorporated herein (as Apps. 2 and 3 [ATT2 & ATT3]) are the Northern California Water Association's and Sacramento Valley Water Users' comments on the SWRCB's draft and final Phase II Scientific Basis Report summarizing the deficiencies in analysis of the SWRCB's 55% of unimpaired flow approach.	Please see Master Response 1, Responses to General Comments, regarding the State Water Resources Control Board's ongoing process to update the Bay-Delta Water Quality Control Plan
10	17	The Draft EIS itself lacks detail about how specifically the CVP would be operated under the 55% of unimpaired flow scenario that is the subject of Alternative 4. Unlike the description in the Draft EIS, the Alternative 4 modeling contains numerous changes to the operational assumptions that are not described in the document, and it is unclear whether Reclamation would operate to those modeling assumptions. For example, the modeling results for Alternative 4 show reductions in total Delta exports over the long-term average. App. F, Table 53-1. Nothing in the Draft EIS or in Appendix F explains how Alternative 4 would be operated or how CVP allocation policy would be adjusted to result in those reduced exports. More generally, the Draft EIS does	Alternative 4 modeling assumptions are provided in Attachments 2-1 and 2-2 of Appendix F. A description of Alternative 4 is provided in Section 3.7 of the main document.

Ltr#	Cmt#	Comment	Response
		not disclose whether that modeling assumption would be implemented under Alternative 4 and, if not, what the impacts would be to storage and other CVP operations. Without additional specificity, Alternative 4 is not operationally feasible and the modeling is not refined enough to fully identify or analyze effects of a 55% unimpaired flow scenario.	
10	18	Appendix F – Attachment 2-6: Winter-Run Chinook Temperature-Dependent Egg Mortality Modeling The Draft EIS relies on a model prepared by Dr. Benjamin Martin at the National Oceanic and Atmospheric Administration's Southwest Fisheries Science Center that Dr. Martin himself has acknowledged should not be used as a tool for operations or management decisions, and that further testing is necessary. The SRS Contractors have commented previously on other ROC-LTO documents that there is considerable uncertainty that is not accounted for in the Martin Model. Instead of repeating those comments here, the SRS Contractors enclose and incorporate herein their prior comments on these issues as submitted to Reclamation and National Marine Fisheries Service on June 12, 2019 (App. 4 hereto).	Please see Master Response 7, Aquatic Resources, regarding the application of modeling results for evaluation of potential impacts to aquatic resources. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding model assumptions and limitations.
10	19	[ATT1: Appendix 1 RESOLUTION NO. 2019-01 OF THE BOARD OF DIRECTORS OF SACRAMENTO RIVER SETTLEMENT CONTRACTORS, A CALIFORNIA NONPROFIT MUTUAL BENEFIT CORPORATION A RESOLUTION REGARDING SALMON RECOVERY PROJECTS IN THE SACRAMENTO RIVER WATERSHED, ACTIONS RELATED TO SHASTA RESERVOIR ANNUAL OPERATIONS, AND ENGAGEMENT IN THE ONGOING COLLABORATIVE SACRAMENTO RIVER SCIENCE PARTNERSHIP EFFORT]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
10	20	[Att2: Appendix 2 Letter from NCWA to SWRCB dated December 16, 2016: Re: Scientific Basis Report, Phase II WQCP Update]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
10	21	[ATT3: Letter from NCWA dated November 9, 2017 to SWRCB: Re: Phase II Bay-Delta Plan Input Pursuant to October 4, 2017 Notice; Final Phase II Scientific Basis Report]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
10	22	[ATT4: Letter to BOR from SRS contractors dated June 12, 2019, Re: Sacramento River Settlement Contractors' Comments and Redlines on the ROC-LTO Draft NMFS Analysis]	The commenter provided this attachment in support of their comments. Those comments are responded to in these responses to comments. No further response is required.

Ltr#	Cmt#	Comment	Response
11	1	[ATT1:] Comments from American River Parties on the Draft Environmental Impact Statement for the Reinitiated Consultation on the Coordinated Long-term Operations of the Central Valley Project and the State Water Project	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. This comment describes an attachment to the cover letter. Responses to the comments provided in the attachment are presented in these responses to comments.
11	2	[From ATT1:] Modified Flow Management Standard. The American River Parties appreciate the inclusion in the EIS of the operations of Folsom Reservoir that are described in the Project Description for the Voluntary Agreement on the Bay-Delta Water Quality Control Plan Update (Section 3.4.4). These include implementation of the temperature management program and the minimum release requirements of the 2017 Modified Flow Management Standard, as well as the annual planning minimum forecasting process. We hope to reach agreement with Reclamation on the planning minimum in the near future.	Reclamation appreciates the American River Party’s support.
11	3	[From ATT1:] Alternative 4. As part of the activities underway concerning the Bay-Delta Water Quality Control Plan update, the American River Parties are working with Reclamation and others to analyze the baseline conditions, the unimpaired flows alternative, and the voluntary agreement alternative, using both CalSIM and SacWAM. That effort will not include a CalSIM modeling run of the unimpaired flows alternative, so we appreciate the inclusion of this modeling information in the Draft EIS. We note that the Draft EIS modeling shows that the proposed unimpaired flow requirement of 55% that was defined in the State Water Resources Control Board’s Framework for the Sacramento Bay/Delta Update (July 2018) was unable to be achieved 10% of the time for the Upper Sacramento River, 35% of the time for the Feather River, and 60% of the time for the American River due to the need to achieve temperature and other instream flow standards, which are themselves established to protect various beneficial uses of those water bodies. It is critical that any regulatory requirements not impair already established temperature and instream flow standards for beneficial uses.	The commenter correctly summarizes the modeling information in the EIS.
11	4	[From ATT1:] Planning Minimum. The EIS references ongoing negotiations between American River parties and Reclamation regarding a proposed “planning minimum”, which would be an appropriate amount of storage in Folsom Reservoir that represents the lower	Updates to Appendix F have been made in response to this comment.

Ltr#	Cmt#	Comment	Response
		bound for reservoir storage at the end of calendar year to be used in annual operations forecasts. In Appendix F, this planning minimum is referenced as having been modeled as 275,000 acre-feet of storage in Folsom Reservoir at the end of September (see Attachment 2-1, pp. 18 and 38 and Attachment 2-2, p. 8). The code used for the CalSIM model shows that the 275,000 AF level was actually defined as the level to be modeled for storage at the end of December. We recommend that Reclamation verify that the model used 275,000 AF as the end of December planning minimum storage level, and that the references in Appendix F be modified to reflect this fact.	
11	5	[From ATT1:] Modeling of Water Deliveries. Also in Appendix F, section 2 Delivery Specifications, Page 7, OBAttachment 2-5 CalSim II Model Delivery Specifications Table 2b titled, American River--Future Conditions has incorrect information regarding Sacramento County Water Agency's (SCWA) surface water future diversions. The table should have one SCWA line, not three. The line should include: Sacramento County Water Agency4 in the first column, show 45,000 AF in the column titled CVP M&I1 Contracts (maximum1), 71,000 AF shown in the column titled Water Rights (maximum), and 107,500 AF shown in the column titled, Diversion Limit (maximum capacity). Footnote 4 should read: SCWA's maximum diversion is limited by the diversion structures capacity. The Freeport Regional Water Authorities diversion structure's current maximum diversion for SCWA is 85 MGD and the City of Sacramento wheeling agreement provides a maximum of 11 MGD. These provide a total diversion capacity of 96 MGD available to SCWA off the Sacramento River. 9,300 AFA of City of Sacramento POU water is available within SCWA, but not included in the above totals.	Updates to Appendix F have been made in response to this comment.

Ltr#	Cmt#	Comment	Response
12	1	The Draft EIS indicates that the proposed project would have significant impacts to water quality and aquatic resources in the Bay Delta estuary, and therefore, active management will be required to ensure water quality is not degraded. It is unclear, however, what actions Reclamation will commit to in order to prevent water quality degradation in an already stressed environment. If the proposed project contributes to a general increase in salinity in the Delta, Reclamation and the Department of Water Resources will have less flexibility for operating the system to protect beneficial uses and drinking water quality. Through the enclosed comments, EPA provides recommendations regarding these issues and others to consider while preparing the Final EIS.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The issues raised in this comment are addressed in the following responses to this comment letter.
12	2	[ATT1: EPA detailed comments on the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Draft Environmental Impact Statement, California -- August 22, 2019]	This comment describes the attachment provided. The comments from this attachments are responded to in these responses to comments.
12	3	[From ATT1:] Water Quality The Bay Delta Water Quality Control Plan (WQCP) contains electrical conductivity (EC) objectives for the Delta to protect agricultural and fish and wildlife beneficial uses, and chloride objectives to protect municipal and industrial water supply beneficial uses. The Draft EIS estimates that EC and chloride concentrations would increase under the Preferred Alternative 1 relative to the No Action Alternative for Delta locations (p. 1-3). Specifically, the Draft EIS identifies the following results for Alternative 1: - Monthly average EC levels in the Sacramento River at Emmaton, Collinsville and the San Joaquin River at Jersey Point under the action Alternatives would be substantially higher than the No Action Alternative EC levels in September through December (p.5-7). The EC objective at Emmaton is intended to protect agricultural beneficial uses, but also has ancillary benefits to aquatic life. Increasing salinity may lead to noncompliance days that would further contribute to existing EC water quality impairments in the western Delta and degrade beneficial use protection for agricultural and aquatic life beneficial uses. - Chloride concentrations at certain Delta locations, including Contra Costing Pumping Plant #1, San Joaquin River at Antioch, Banks and Jones Pumping Plants would be higher, particularly in September through January (p. 5-8).	The Bay-Delta Water Quality Control Plan (WQCP) EC objective for Emmaton is specifically for protection of agricultural beneficial uses. The Bay-Delta WQCP contains separate EC objectives for protection of fish and wildlife uses. These are established for the San Joaquin River and various locations in Suisun Marsh; no fish and wildlife EC objectives are established for Emmaton. The commenter states that the Emmaton EC objective for agricultural beneficial uses protection also has ancillary benefits for aquatic life, but the nature of the ancillary protection provided to aquatic life is not identified in the comment nor has it been established through a formal standard setting process in the Bay-Delta WQCP. The Bay-Delta WQCP EC objective for Emmaton varies by water year type and applies from April 1 to August 15. The period when EC levels would be higher under the action alternatives relative to the No Action Alternative is September through December, which is outside of the period when the Emmaton EC objective applies. During the period when the Emmaton EC objective applies (i.e., April through August), the modeling results presented in the DEIS Section 5.2.1.3, Figures 5.2-4 and 5.2-5, show that EC levels under the action alternatives would be nearly the same as those under the No Action Alternative. Thus, the modeling results indicate that the action alternatives would not result in additional noncompliance days compared to the No Action Alternative, and thus would not contribute to EC water quality impairments in the western Delta and degrade beneficial use protection for agricultural beneficial uses. These project-level effects are explained for each alternative's

Ltr#	Cmt#	Comment	Response
		The Draft EIS states that CVP and SWP would continue to be operated in real-time to meet the Bay-Delta WQCP EC and chloride objectives for protection of Delta beneficial uses. Thus, additional impairments to the Delta's beneficial uses, related to salinity, would not be expected under the action alternatives compared to the No Action Alternative (p. 5-8). Reclamation should explain how real-time operations would prevent additional impairments, given that EC concentrations in the Bay-Delta are already at or near the EC water quality objective and higher salinity under the alternatives would appear to lead to exceeding the EC objective. The Draft EIS doesn't clearly explain what additional steps could be taken during real-time operations to prevent increase of EC under the alternatives and who would be responsible for meeting the objectives.	EC assessment in the DEIS Appendix G, Section G.2. Such results are consistent with the modeling assumptions, which include compliance with D-1641 standards (see DEIS Appendix F). Regarding the San Joaquin River at Jersey Point, the Bay-Delta WQCP EC objectives for fish and wildlife protection apply during April and May of wet, above normal, below normal, and dry water years. The Bay-Delta WQCP EC objectives for agricultural beneficial use protection apply from April 1 to August 15. Modeling results presented in Appendix F, Figure 7-1 and Tables 7-1 through 7-4, show little difference between the action alternatives and No Action Alternative EC levels during these months, indicating that the action alternatives would not result in additional noncompliance days at this location compared to the No Action Alternative. These project-level effects are explained for each alternative's EC assessment in the DEIS Appendix G, Section G.2. Regarding the Collinsville compliance location, EC objectives apply during October through December, when the modeled EC would be higher under the action alternatives relative to the No Action Alternative. However, the Bay-Delta WQCP has the added objective of demonstrating "that equivalent or better protection will be provided at the location." The Suisun Marsh Preservation Agreement is a component of all the alternatives, as described in the DEIS Section 3.2.6, Suisun Marsh Preservation Agreement (SMPA). As stated in Section 3.2.6, the SMPA requires Reclamation (along with DWR) to meet salinity standards in accordance with D-1641. Regarding chloride, one Bay-Delta WQCP objective applies either at Contra Costa Pumping Plant #1 or at Antioch for a certain number of days per year, depending on water year type. In addition, objectives apply at several Delta locations year-round, including Contra Costa Pumping Plant #1, Banks and Jones Pumping Plants. Higher modeled chloride under the action alternatives compared to the No Action Alternative in certain months does not indicate additional noncompliance; rather is indicates chloride would be higher than under the No Action Alternative. A component of the action alternatives is continued application of Bay-Delta WQCP water quality objectives via D-1641, per the description of alternatives in the DEIS Chapter 3. As a water right decision, D-1641 is the enforceable instrument for establishing the responsibility for implementation of the Bay-Delta WQCP water quality objectives. Staff from Reclamation (and DWR) constantly monitor Delta water quality and compliance with objectives as part of daily operations and

Ltr#	Cmt#	Comment	Response
			management of the CVP (and SWP). Such monitoring and real-time decision making is necessary and will continue to occur to maintain compliance with D-1641. In reviewing Appendix G to respond to this comment, a required text correction was identified. On pages G-92, G-112, G-118, and G-125, the following sentence was changed from: “The western Delta EC objectives for the Sacramento River at Emmaton and San Joaquin River at Jersey Point for agricultural beneficial use protection apply from April through June, July, or August, depending on water year type (SWRCB 2006)” to “The western Delta EC objectives for the Sacramento River at Emmaton and San Joaquin River at Jersey Point for agricultural beneficial use protection vary depending on water year type and apply from April 1 through August 15 (SWRCB 2006).” This modification does not change conclusions identified in the EIS.
12	4	[From ATT1:] Although the Delta outflow objective is discussed in Chapter 3 Affected Environment, the water quality chapter of the Draft EIS does not evaluate the alternatives against the full suite of Water Quality Objectives for Fish and Wildlife Beneficial Uses (included in Table 3 of the Bay Delta WQCP). Recommendation: Describe mitigation measures that would allow the proposed project to be implemented without increased exceedances of water quality objectives in the already-degraded Delta. These measures may include the reduction of exports to provide more outflow and mitigate salinity intrusion.	Refer to response to comment 12-3 regarding the potential for the action alternatives to result in additional noncompliance with Bay-Delta WQCP water quality objectives, as compared to the No Action Alternative. Based on the analysis and that a component of the action alternatives is continued application of Bay-Delta WQCP water quality objectives via D-1641, no additional mitigation measures are proposed.
12	5	[From ATT1:] Recommendation: Evaluate all Alternatives with respect to all water quality standards listed in Tables 1-3 of the Bay-Delta WQCP, and indicate whether each standard would be met under each alternative.	Please refer to response to comment 12-3 and 12-4.
12	6	[From ATT1:] Recommendation: Clearly identify the water quality objectives that the proponents intend to meet by fine-tuning reservoir storage and exports in real time, and clearly state this as an enforceable commitment in the Final EIS and Record of Decision (ROD).	Please refer to response to comment 12-3 and 12-4. D-1641 is the enforceable instrument through which Reclamation must operate the CVP to meet Bay-Delta WQCP water quality objectives. An additional commitment in the Final EIS ROD is not necessary.
12	7	[From ATT1:] Recommendation: Provide historical data to illustrate how D-1641 standards have been met in the past, including modifications of requirements of D-1641 because of drought conditions.	The potential impacts of the action alternatives are evaluated against the effects identified in the No Action Alternative which represents existing and historic conditions. The modeling used in the EIS for this comparative analysis uses historic data. The results of this comparative analysis provide an indication of the direction and magnitude of potential changes forecast with implementation of the alternatives. Please see Master Response 6 regarding the limitations of modeling and extreme conditions.

Ltr#	Cmt#	Comment	Response
12	8	[From ATT1:] Reclamation currently operates to a 7 milligrams per liter dissolved oxygen requirement at Ripon in the Stanislaus River from June 1 to September 30 to protect salmon, steelhead, and trout in the river. Reclamation has proposed to move the compliance location from Ripon to Orange Blossom Bridge because the species are primarily located there at that time of year (p. 3-40). EPA recommends that Reclamation use a point that characterizes the overall condition of the waterbody. If Orange Blossom Bridge reflects conditions that are significantly better than average conditions in the waterbody, additional compliance points should be referenced. California beneficial uses are expected to occur generally across a waterbody and not just at high quality locations.	As described in Chapter 5, Section 5.9.1.5, Stanislaus River, Reclamation acknowledges that moving the compliance point for water quality and specifically dissolved oxygen (DO) from Ripon to Orange Blossom Bridge may result in a shift in water quality conditions further downstream. Please refer to Master Response 7, Aquatic Resources, for discussion of relocation of the compliance point on the Stanislaus River. Water quality monitoring has shown that the DO is approximately 1.0 to 2.0 mg/L higher at Orange Blossom Bridge than at Ripon, which may result in a downstream range of oxygen ranging between 5.0 to 6.0 mg/L, assuming 7.0 mg/L at Orange Blossom Bridge. The potential for impacts due to this change varies by species. Steelhead are likely to be absent from the downstream reaches below Orange Blossom Bridge during summer periods when DO would be at its lowest potential concentration (Kennedy and Cannon 2002, Kennedy and Cannon 2005, Kennedy 2008). Small numbers of Steelhead smolts have been captured in rotary screw traps at Caswell State Park and near Oakdale (FISHBIO 2007; Watry et al. 2007, 2012), and data indicate that Steelhead out-migrate primarily from February through May. The compliance window for DO is June through September, which would generally occur outside of observed migratory periods. Since rearing would occur further upstream and outmigration generally occurs outside of the compliance period, a notable effect on juvenile steelhead is not anticipated. Returning adult Chinook salmon may be exposed temporarily to DO between 5-7 mg/l on during their upstream migration. Temporary exposure between 5-7 mg/l may result in mild stress but not likely lead to any impact to reproductive health, where less than 5 mg/l can pose more notable issues (Bjornn and Reiser 1991). Any holding spring-run Chinook would likely not occur downstream of Orange Blossom Bridge and would likely avoid any condition that may be stressful. Reclamation sees the revision to the compliance point as a more reflective location for supporting and maintaining key biological activity. The location also does not create unnecessarily poor conditions and is generally protective of key biological resources. In addition to the justification provided here, Reclamation will engage with the Water Board to seek regulatory approval for this proposed shift in the compliance location.

Ltr#	Cmt#	Comment	Response
12	9	[From ATT1:] Recommendation: Discuss all changes affecting implementation of water quality standards (including changes to compliance locations [on Stanislaus River]) under the Alternatives.	Refer to Chapter 3, Alternatives, Section 3.4.6.1 Seasonal Operations, for description of the relocation of the compliance point under Alternative 1 from Ripon to Orange Blossom bridge, the compliance period of June 1 to September 30, and the compliance target of 7mg/L dissolved oxygen concentration. See Sections 3.3.6, 3.5.6, 3.6.7, and 3.7.7. for descriptions of the action under the No Action Alternative, Alternative, 2, Alternative 3, and Alternative 4, respectively. Please see the response to Comment 8 of this letter for additional discussion on relocation of the water quality compliance location on the Stanislaus River.
12	10	[From ATT1:] Recommendation: Conduct, if applicable, a sensitivity analysis to show the impact of changing the site of water compliance sampling locations [on Stanislaus River] and what impact such changes would have on the water bodies.	Please see the response to comment 12-8 for additional discussion on relocation of the water quality compliance location on the Stanislaus River. See Master Response 5, Adequacy of Analysis and Mitigation, regarding the adequacy of analyses conducted in the EIS. Refer to Master Response 7, Aquatic Resources, regarding analysis of aquatic resources and requests for additional analyses.
12	11	[From ATT1:] Recommendation: Consult with the State Water Board and the Central Valley Regional Water Quality Control Board to ensure that any changes under the Alternatives are consistent with Porter-Cologne Water Quality Control Act and Clean Water Act requirements.	Reclamation operates the CVP in accordance with applicable state and Federal law, and will coordinate with state and Federal agencies as required under applicable law.
12	12	[From ATT1:] Biological Resources Freshwater flow is one of the best tools available in the short term to improve fish populations and protect aquatic life beneficial uses, given its widely cited importance to ecosystem recovery. Relative fish abundance responses to freshwater flow can be estimated using regression equations provided in peer reviewed literature and government reports. [Footnote 1: United States Fish and Wildlife Service, September 27, 2005, Recommended Streamflow Schedules To Meet the AFRP Doubling Goal in the San Joaquin River Basin (FWS 2005), pp. 27 available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_spprtinfo/afrp_2005.pdf; Jassby AD, Kimmerer WJ, Monismith SG, Armor C, Cloern JE, Powell TM, Schubel JR, Vendlinski TJ. 1995. Isohaline position as a habitat indicator for estuarine applications. Ecological Applications 5(1): 272-289; Kimmerer, W. J. 2002. Effects of freshwater flow on abundance of estuarine organisms: Physical effects or trophic linkages? Marine Ecology Progress Series 243:39-55;	See EIS Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources, specifically Section 5.9.1.7, Bay-Delta, for discussion of potential changes to aquatic resources as a result of project-level operations and actions. Reclamation wrote this EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. Reclamation acknowledges that uncertainty is inherent in any project of this geographic and temporal scale. Moreover, foreseeing the unforeseeable is not possible. Reclamation, however, has strived to use the best available science throughout the EIS, consistent with the requirements of NEPA and, used its best efforts to find out and disclose what it reasonably can. Additionally, the official public review process for the EIS provides an opportunity for formal public comment on the alternatives and impact analysis. Refer to the EIS at Appendix O, Section O.2.10.1, Fish in the Delta, for citations of the Jassby et al. (1995), Kimmerer (2002b), and Kimmerer (2009) studies referred to by the commenter. The USFWS (2005) document referred to by the commenter was considered in the development of the EIS; however, the salmon doubling objective was similarly addressed in the SWRCB's 1995 Bay-Delta Water Quality Control Plan, which is described in the EIS at Section 2.1, Background.

Ltr#	Cmt#	Comment	Response
		Kimmerer WJ, Gross ES, MacWilliams ML. 2009. Is the response of estuarine nekton to freshwater flow in the San Francisco Estuary explained by variation in habitat volume? Estuaries and Coasts 32: 375-389.] Reclamation identifies models that were developed to predict impacts of outflow on survival, but indicates that these models do not provide enough certainty for use in the Draft EIS, suggesting that Delta outflow is not a critical factor in evaluation of the Alternatives. However, we note that a lack of absolute certainty in available models doesn't mean that Delta outflow doesn't impact survival. Conceptual models consistently identify Delta outflow as a significant factor on salmon and smelt survival.	Please also see Master Response 1, Responses to General Comments, regarding the SWRCB's updates to the Bay-Delta Water Quality Control Plan, and see Master Response 4, Alternatives Formulation, regarding development of Alternative 4. Please refer to Master Response 7, Aquatic Resources, regarding application of modeling results and Delta outflow. See Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science and NEPA requirements for impact determinations in the EIS. Also see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding surface water modeling, including discussion of CalSimII.
12	13	[From ATT1:] The Draft EIS indicates that because salmon use multiple cues (outflow, temperature, salinity, DO) for migration, the disruption of one cue type (i.e., outflow) will not lead to adverse impacts, and, therefore, any additional reductions of outflow from Alternative 1 would have no impact on salmon survival (p.1-11). However, reliance on multiple cues does not necessarily mean that flow reductions under Alternative 1 won't lead to a disruption in migration. Also, the Draft EIS states "...the fact that survival has remained extremely low despite positive tidally-averaged net flows (Buchanan et al. 2018, SJRG 2011, SJRG 2013) clearly contradicts expectations articulated in the 2009 NMFS Biological Opinion" (p. 1-11). In making this statement, the Draft EIS does not demonstrate that it considered a long enough period (i.e., a sufficient number of wet and dry years) in evaluating the flow-survival relationship.	Please refer to Appendix O, Aquatic Resources, Section O.3, Evaluation of Alternatives, for discussion of potential effects of flow alterations on salmonids. Specifically, see Section O.3.3.8, Bay-Delta, for details on the assessment of the potential for water project operations to influence juvenile salmonid survival and routing. Project-level effects from water export operations are also summarized in Chapter 5, Environmental consequences, and are discussed specifically for the Bay-Delta in subsection 5.9.1.7, Bay-Delta. As described in Appendix O, Section 0.3.3.8, During the December through May outmigration period, under Alternative 1, the average total export rate is slightly higher compared to the No Action Alternative; therefore, slightly higher entrainment of juvenile salmonids is expected compared to the No Action Alternative, though the proportion of juvenile salmonids out-migrating from the Sacramento River entrained at project facilities is very low. Appendix O also explains that overall, Alternative 1 results in higher velocities in the Delta in the spring than under No Action Alternative, during the out-migrating juvenile time period. Through-Delta survival probabilities are non-linear; however, the higher discharge at Freeport in the spring under Alternative 1 results in higher survival in transition reaches, and higher flows also lead to lower probability of routing into the interior Delta, which has the lowest survival probability regardless of flow. As described in Appendix O, the potential for water project operations to influence survival and routing was assessed with hydrodynamic modeling. Reclamation and DWR analyzed Delta hydrodynamic conditions by creating maps from DSM2 Hydro modeling using data for water years 1922–2003, which included analyses of critically dry, dry, below normal, above normal, and wet years.

Ltr#	Cmt#	Comment	Response
12	14	[From ATT1:] The biological resource evaluation in the Draft EIS appears to be based on visual review of the figures rather than a comprehensive analysis of the state of the species on a watershed scale and the project area as a whole. It is therefore not clear what the actual impacts to the species are.	Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. For more discussion and details on analyses and modeling, including use of the CalSim II model, HEC5Q model, Reclamation Temperature Model, DSM2 modeling, and Winter Run Chinook Temperature-Dependent Egg Mortality Models see: Chapter 5, Environmental Consequences, Section 5.1.5, Modeling Methodology; Appendix F, Model Documentation; and Appendix O, Section O.3.1, Methods and Tools. Refer to Master Response 7, Aquatic Resources, regarding analysis of potential impacts to aquatic resources and regarding application of modeling results. Please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding adequacy of analyses included in the EIS, including discussions of the use of best available science and NEPA requirements regarding impact determinations.
12	15	[From ATT1:] Recommendation: Use a quantitative method to evaluate whether adverse impacts to aquatic life are determined to be significant. Include endpoints associated with ecological impact, test metrics, effects thresholds, and tests of significance associated with ecological impact.	Please refer to response to comment 12-14.
12	16	[From ATT1:] Recommendation: Conduct the evaluation by water year type rather than across all water types, as this facilitates identification of issues during dry years when the frequency or magnitude of exceedance are more pronounced or critical to species survival.	Refer to responses to comments 12-13 and 12-14. As described in Appendix F, Model Documentation, Section F.8, Model Results for Modeled Alternatives, modeling results were presented in multiple formats, including by water year type.
12	17	[From ATT1:] Recommendation: In the Biological Resources section, include a horizontal line in the figures depicting temperature thresholds and life stage presence to better demonstrate the context and intensity of the values presented.	The maps, figures, and graphics in the EIS are designed to provide the level of detail appropriate to depict potential effects and orient readers to locational information. Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations.
12	18	[From ATT1:] Recommendation: Consider a large and diverse (i.e., a full range of water year types) review period in evaluating whether there are impacts from Delta outflow. The data review period is important in determining whether a response is observed between survival and outflow. If a review period includes	Please refer to Section 3.4.1.4.2, Commitment to Cold Water Management Tiers and Section 3.4.8.6 regarding the use of Independent Panels to review certain components of Alternative 1. Refer to responses to comments 12-13 and 12-14. Also refer to Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding

Ltr#	Cmt#	Comment	Response
		mostly dry years, it is less likely to observe a response because the range of response likely will be minimal.	common modeling concerns about operations in extreme conditions, and for discussion of drought analysis.
12	19	[From ATT1:] General This document is a combined project-specific and programmatic document and defines each action type in Table 3.4-1. Even when considering Appendix D: Alternative Development, it is unclear what actions are a part of the Proposed Action. Most of the restoration actions are programmatic actions whose funding, assurance, benefits, and drawbacks are unknown. Some actions are a part of other separate projects, such as the San Joaquin River Restoration Program (p. 3-41). In addition, the Final EIS would benefit from a more clear description of what the significance criteria are for evaluating impacts.	Section 3 of the EIS provides a components table for each alternative and identifies which components are evaluated at the program-level and which are evaluated at a project-level. Table 3.4.1 lists the components of Alternative 1. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding the regarding significance criteria.
12	20	[From ATT1:] Recommendation: In the Final EIS, clarify what actions (programmatic and/or project-level) this environmental review process is supporting. Specifically, when the ROD is signed, clarify what actions will be supported by the ROD. Please identify if specific actions are identified and described because they will be offsetting negative impacts from the proposed action.	Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding the description of the proposed project and which actions are evaluated at a program level and which are evaluated at the project level. It is currently estimated that the ROD will be issued in early 2020. The ROD will provide a decision on the project including identification of practicable measures to avoid environmental impacts.
12	21	[From ATT1:] Recommendation: Define significance for each environmental impact considering both context and intensity (40 CFR Part 1508.27).	Please see Master Response 5, Adequacy of Analysis and Mitigation regarding impact conclusion statements.

Ltr#	Cmt#	Comment	Response
13	1	I strongly oppose this new water plan which makes it easier to drain the Trinity River and other Northern California rivers of the waters they need to sustain these fisheries and this ecosystem. Before these rivers get drained of their life sustaining drops, there should, at least, be accountability for conservation and intelligent consumption of this resource. One can farm in many different places, the Salmon can only exist here and this water plan takes away their home. This is a magnificent species. As a food source, it far surpasses meat as a healthy protein source. It is the anchor food for this entire ecosystem and the Native populations that have depended on it since time immemorial.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS. All ROC on LTO alternatives include continuing to operate in accordance with the TRRP ROD.
13	2	Not to mince words, but this looks to be a water grab by the Central Valley petro-agribusiness, disproportionately benefiting them at the expense of small farmers. While I understand the need for farming, I also note that this water use is mismanaged and squandered with little oversight to its over usage.	Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.

Ltr#	Cmt#	Comment	Response
14	1	The Coalition is concerned, in particular, about the description of a Delta Smelt Summer-Fall Habitat Action included in Alternative 1 in the DEIS. To begin with, the DEIS states that a biological goal of the Summer-Fall Habitat Action is maintaining low-salinity habitat in Suisun Marsh and Grizzly Bay. This goal is not consistent with our current understanding of the distribution and ecology of Delta Smelt. The public draft Biological Opinion explains that Delta Smelt are not limited to a narrow portion of the low-salinity zone in the San Francisco Estuary, but can reside in a range of conditions from freshwater to water with salinity in the range of 12-19 parts per thousand (USFWS 2019:105- 106). The dated conceptual model relied upon in the DEIS is based on the false premise that X2 is a valid surrogate (or proxy) for the location, extent, and quality of Delta Smelt habitat. Murphy and Weiland (2019, attached [Attachment 1]) show that the Fish and Wildlife Service did not appropriately characterize Delta Smelt habitat in the previous Biological Opinion (USFWS 2008) and took no steps to validate the assumption that the location of X2 determines the extent and quality of Delta Smelt habitat. The authors draw from publicly available trawl data, map the distribution of Delta Smelt, and show that Delta Smelt are frequently found outside the portion of the low-salinity zone that was used in 2008 by the Service as a "surrogate indicator" for the species' actual habitat and is used again for that purpose in the DEIS.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The Summer-Fall Habitat Action in large part focuses on maintaining low salinity habitat in Suisun Marsh, based on a recent published study work (Hammock, B. G., J. A. Hobbs, S. B. Slater, S. Acuña, and S. J. Teh. 2015. Contaminant and food limitation stress in an endangered estuarine fish. Science of the Total Environment 532:316-326) suggesting that this is a productive area relative to other portions of the species' range, in addition to maintaining connectivity of low salinity habitat in the north Delta arc where Delta Smelt are relatively abundant; low salinity habitat having also been shown to provide reduced cellular stress compared to higher salinity (Hasenbein, M., L. M. Komoroske, R. E. Connon, J. Geist, and N. A. Fangue. 2013. Turbidity and Salinity Affect Feeding Performance and Physiological Stress in the Endangered Delta Smelt. Integrative and Comparative Biology 53(4):620-634). Please see Chapter 3 for refinements to Alternative 1 related to the Delta smelt Summer-Fall Action.
14	2	Polansky et al. (2018, attached [Attachment 2]) demonstrate that Delta Smelt are largely concentrated in three geographic areas in the upper estuary: Suisun Bay and Suisun Marsh in the west of the species' geographic range, at and adjacent to the Sacramento and San Joaquin rivers confluence, and in the Cache Slough complex of channels and embayments to the northeast. In contrast to Feyrer et al. (2011) and consistent with Manly et al. (2015), they found that salinity and turbidity appear to explain very little of the variation in catch of adult Delta Smelt. Polansky et al.'s findings buttress the conclusion in Murphy and Weiland (2019) that the monthly average location of X2 in the autumn is not a surrogate for Delta Smelt habitat. That conclusion is further reinforced by Kimmerer et al. (2013), who state emphatically that "our use of salinity as the only variable that defines habitat is clearly inadequate." Combined these investigations indicate that the reference in the DEIS to "maintaining low-salinity habitat" mischaracterizes the actual habitat used by Delta Smelt and directs conservation planning away from the environmental factors that are responsible for the decline in Delta Smelt numbers.	The commenter's comparison of Polansky et al. (2018) to the other cited papers is inappropriate because Polansky et al. (2018) focused on adult Delta Smelt during winter-spring, whereas the other papers consider juvenile/subadult Delta Smelt in fall (September-December), and the habitat action that the commenter is commenting on focuses on summer/fall. As noted in the response to comment 14-1, the summer/fall Delta Smelt habitat action is supported by studies indicating, for example, that Suisun Marsh is relatively productive compared to other areas and that low salinity gives lower Delta Smelt cellular stress than higher salinity.

Ltr#	Cmt#	Comment	Response
14	3	While the Coalition applauds the Bureau of Reclamation and Fish and Wildlife Service for their efforts to develop a Summer-Fall Habitat Action that can be modified over time to reflect the best available scientific information relevant to conserving Delta Smelt, we are concerned that both the biological goals and conceptual model that form the basis for the Action are outdated and uninformed by contemporary scientific information (best available science).	As noted in response to comments 14-1 and 14-2, the basis for the Summer-Fall Habitat Action reflects scientific studies that support Suisun Marsh as productive habitat and low salinity as having relatively low cellular stress for Delta Smelt. Please also refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science.
14	4	Following implementation of the Fall X2 Action in 2017, the Bureau spearheaded a group of studies referred to as the Directed Outflow Project (DOP) to evaluate the benefits of fall outflow for Delta Smelt. While the final compendium of DOP studies (led by the Bureau) has yet to be released, the analyses described in the studies makes clear that available "new" scientific information supersedes the previously assumed Delta Smelt habitat relationship upon which the Summer-Fall Habitat Action in the DEIS is based (see conclusions in Shultz et al. 2019). The Coalition has previously submitted a detailed assessment of the Fall X2 Action to the Bureau and Service in anticipation of a comprehensive 10-year review that was required by the 2008 Biological Opinion (USFWS 2008), but was never completed. We attach that assessment [Attachment 4] and ask that the Bureau take it into consideration when completing a DEIS for recirculation and review or the FEIS.	It is anticipated that the Summer-Fall Habitat Action will be adaptively managed over time to reflect scientific knowledge such as the results of the Directed Outflow Project and aspects of the points raised in the commenter's Attachment 4 (Reconsidering the Fall X2 Action Using the Best Available Scientific Information). With respect to the latter, it should be noted that there is considerable consistency in the definition of Delta Smelt habitat provided in the commenter's Attachment 4 and the EIS (seeSection 3.4.5.8, Delta Smelt Summer-Fall Habitat) with respect to factors such as salinity and temperature. Also refer to Master Response 7, Aquatic Resources, regarding Delta Smelt Summer-Fall habitat operations and modeling.
14	5	ATT1: The low-salinity zone in the San Francisco Estuary as a proxy for delta smelt habitat: A case study in the misuse of surrogates in conservation planning. Dennis D. Murphy, Paul S. Weiland, May 2019	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
14	6	ATT2: Spatiotemporal Models of an Estuarine Fish Species to Identify Patterns and Factors Impacting Their Distribution and Abundance. Leo Polansky & Ken B. Newman & Matthew L. Nobriga & Lara Mitchell 2017	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
14	7	ATT3: Spatiotemporal models of an estuarine fish species to identify patterns and factors impacting their distribution and abundance Leo Polansky, Ken B. Newman, Matthew L. Nobriga, Lara Mitchell Supplementary Material	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
14	8	ATT4: Reconsidering the Fall X2 Action Using the Best Available Scientific Information Prepared by the Coalition for a Sustainable Delta for the Bureau of Reclamation and U.S. Fish and Wildlife Service December 2018	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

Ltr#	Cmt#	Comment	Response
15	1	The fishery resources of the Trinity River system are critical to the Hupa people who hold federally-recognized, judicially and congressionally confirmed, reserved property rights in them. The relationship of the Hoopa Valley Tribe (Tribe) to the federal trustee in management of the Trinity River is conducted under precepts of self-governance established in federal law [Public Law 104-413], and recognizes the Tribe as a comanager of the trust resources that the United States holds in trust for its benefit. The Central Valley Project Improvement Act's (CVPIA) Trinity provision [Public Law 102-575 §3406(b)(23)] goes further, requiring the Secretary to obtain the Tribe's concurrence in determining "permanent instream fishery flow requirements and Trinity Division operating criteria and procedures for the restoration and maintenance of the Trinity River fishery." The Tribe's status under this provision of the CVPIA is a unique limitation on the Secretary's authority to manage the Tribe's trust resources. Thus, Federal law requires Interior Department agencies to act in concert with and subject to the Tribe's trust interests in the restoration, preservation and propagation of the Trinity River resources held in trust for the Tribe. In accordance with 40 CFR 1501.6 "..throughout the development of an environmental document, the lead bureau will collaborate, to the fullest extent possible, with all cooperating agencies concerning those issues relating to their jurisdiction and special expertise." That did not occur. As a result, the preceding Administrative Draft documents are incomplete. Specifically, they lack sufficiently detailed scientific methodologies to: (1) analyze existing and potential effects of CVP operations and other actions on the Tribe's fishery; and (2) use those analyses as a basis for effective joint federal-tribal decision making.	"As stated in the 2000 TRRP ROD, ""Former Secretary of the Interior Cecil D. Andrus considered the findings of the 1980 EIS as well as the statutory and tribal trust responsibilities involved. With respect to the trust obligations of the Department, Secretary Andrus found that: the Hupa and Yurok Indians have rights to fish from the Trinity and Klamath Rivers . . . These rights are tribal assets which the Secretary, as trustee, has an obligation to manage for the benefit of the tribes. The Secretary may not abrogate these rights even if the benefit to a portion of the public from such an abrogation would be greater than the loss to the Indians. Secretarial Issue Document, Trinity River Fishery Mitigation, at 3 (January 1981) (1981 SID). The Secretary also found that the trust obligation "includes both a duty to preserve the trust assets and to make them productive." The Secretary concluded that the statutory and trust obligations of the Department compelled the restoration of the Trinity River anadromous fishery to pre-TRD levels. Therefore, Secretary Andrus directed the Service to complete a 12-year study which would assess the effectiveness of flow and habitat restoration efforts and make recommendations on measures necessary to address the fishery impacts attributable to the TRD consistent with the Department's obligations."" The TRRP ROD ""adopts the recommendations contained in the TRFES, is based on the extensive scientific studies contained in the TRFES, and is the most practical and scientifically based restoration strategy. [The] ROD represents the culmination of over two decades of efforts aimed at understanding the necessary instream flow and physical habitat restoration requirements in order to restore the Trinity River anadromous fishery. Statutory requirements since 1955, based in large part upon the federal government's trust obligations to the Hoopa Valley and Yurok Tribes, require the restoration and maintenance of the Trinity River anadromous fishery resources to pre-dam levels. It is clear that restoration must provide for a meaningful fishery, not only for the Tribes, but also for commercial, sport, and recreational fishermen. These important resources represent both tribal trust and public treasures from which all should benefit - to restore the faith of our tribal beneficiaries and to improve the economic well-being of the Trinity Basin and North Coast as a whole."" All alternatives in the ROC on LTO EIS include continued implementation of the TRRP ROD." Reclamation has met with the Hoopa Valley Tribal council, in their tribal council building, once during this process (Tuesday, December 12, 2017). In

Ltr#	Cmt#	Comment	Response
			addition, Reclamation has had government -to-government meetings with the Hoopa Valley Tribe in Sacramento (including a ROC specific meeting on Thursday, September 14, 2017). Since those initial formal meetings, Reclamation staff has met and talked to Hoopa Valley Tribe staff on the phone as requested, including during this comment period, included the Hoopa Valley Tribe in workshops (February 28, 2018, April 26, 2018, May 23, 2018, June 7, 2018, June 21, 2018, December 7, 2018, and February 20, 2019) and included the Hoopa Valley Tribe in a Trinity specific brainstorming session in Weaverville (January 4-5, 2018).
15	2	The Draft Environmental Impact Statement (DEIS) was compromised by inadequate preparation time and the decision by the Bureau of Reclamation (Reclamation) to back out of earlier commitments to incorporate Trinity-specific actions such as mitigation for warm water releases from Lewiston Dam, and abide by legal limitations on diversions of Trinity River Division (TRD) water to the Central Valley. The Tribe was rushed to review substantially incomplete drafts, and was afforded little opportunity for group discussion and information sharing between Reclamation staff and Klamath-Trinity science experts. As a result, the DEIS is replete with misinformation and omissions.	Reclamation has prepared the EIS in accordance with Secretarial Order 3355, recognizing this is a project of significant complexity. All of the alternatives include implementation of the Trinity River Restoration Program ROD, which implements Reclamation's legal obligations for the Trinity River fishery as well as lower Klamath River augmentation flows to prevent fish disease. Please see comment response for 15-2 regarding coordination. NEPA emphasizes "interagency cooperation before the environmental impact statement is prepared, rather than submission of adversary comments on a completed document" in order to reduce delay and paperwork (40 CFR 1500.5, subd. (b); see also 40 CFR 1500.4, subd. (g) (EIS should use scoping process to narrow the scope of the EIS in order to reduce paperwork). Appendix Z: Consultation and Coordination describes the coordination efforts with local water interests, stakeholder groups, Native American Representatives, and other local, State and federal agencies throughout the environmental review process, beginning in 2016 with the reinitiation of consultation. Reclamation has coordinated with Cooperating Agencies, Responsible Agencies, Trustee Agencies, and Native American Representatives in compliance with NEPA. Reclamation will continue coordination with stakeholders and Native American Representatives as the project continues.
15	3	The DEIS delivers insufficient disclosure of impacts to Trinity and Klamath rivers. While recognizing the need to view holistically the operation of both the State Water Project and Central Valley Project, Reclamation made the decision to set aside complete review of impacts of alternatives on the ability of the Trinity River Division to restore, preserve and propagate tribal trust resources as required by Federal law. The Tribe remains concerned that operations of TRD, including Lewiston Dam flow release requirements and management of carryover storage behind Trinity Dam, are not being analyzed sufficiently; negative effects on the Trinity River are obscured or ignored, potentially	All alternatives include continued implementation of the Trinity River Restoration Program ROD flows as well as lower Klamath augmentation flows. Alternatives 1-3 do not propose any changes to Trinity River operations. Alternative 4 adds flows for coho spawning in Grass Valley Creek below Buckhorn Dam, in addition to continuing to implement the TRRP ROD and lower Klamath augmentation flows. The project's purpose and need is to maximize water supplies and optimize marketable power generation while addressing the status of listed species. Therefore, alternatives bracket a range of

Ltr#	Cmt#	Comment	Response
		underestimating threats to the Tribe's fishery and overestimating water volumes available for diversion through Clear Creek Tunnel (aka Carr Tunnel).	changes water supply, with Alternative 4 analyzing increased flows for listed species and reductions to water supply from current operations.
15	4	The DEIS fails to incorporate an adequate range of alternatives. Absent is an alternative to adequately address 1) management of Trinity River Division to restore and protect the Tribe's fishery and 2) to implement legally-required annual releases for the benefit of Humboldt County and downstream users. Protection of the Tribe's fishery requires changes to infrastructure and re-operation of the Trinity-Lewiston complex to meet water temperature needs between Lewiston Dam and the Klamath River confluence. In previous efforts, alternatives to enhance protection of Trinity River salmon and conservation of coldwater resources behind Trinity Dam have undergone evaluation by the Temperature Workgroup of Trinity River Restoration Program (TRRP), [Endnotes 3 and 4: https://www.fws.gov/arcata/fisheries/reports/tamwg/2013/Jan2013/2013%20Temperature%20Work%20Group%20Project%20Reports%20v6.Pdf [https://www.fws.gov/arcata/fisheries/reports/tamwg/2016/2016_05/4%20Letter%20to%20Bor%20from%20TMC%20Chair%20May%2023,%202016.pdf] and have been the subject of a technical evaluation by Reclamation [Endnote 5: Reclamation. 2012. Lewiston Temperature Management Intermediate Technical Memorandum. Lewiston Reservoir, Trinity County, California. US Bureau of Reclamation. 73pp.]. Relevant issues not addressed in the DEIS include alternatives to management of End Of Season carryover storage behind Trinity Dam [Endnote 6:Trinity Reservoir end of season carryover storage requirements are insufficient – as evidenced by uncontrollable warming of Lewiston released during salmon spawning in October 2015], and construction of new infrastructure to mitigate thermal loading during warm months in the reach between Trinity and Lewiston dams.	The project's purpose and need is to maximize water supplies and optimize marketable power generation while addressing the status of listed species, for the continued operation of the CVP and SWP. Therefore, alternatives bracket a range of changes water supply, with Alternative 4 analyzing increased flows for listed species and reductions to water supply from current operations. Alternatives 1-3 include current operations on the Trinity River, including implementation of the TRRP ROD, which addresses Reclamation's legal requirements (see also response to comment 15-1). Alternative 4 has additional flows for fisheries purposes in the Trinity River watershed, to prevent coho stranding and increase spawning habitat for coho on Grass Valley Creek. Alternative 4 therefore includes an action above and beyond current operations to restore and protect the Tribe's fishery. Reclamation is aware of the Technical Services Center report (Bender 2006) suggesting a higher end of season storage range that would be helpful for protecting cold water pool and improving temperature management on the Trinity River. However, Reclamation is responsible for the entire CVP, not just the Trinity River, and carryover storage targets limit Reclamation's ability to respond to real-time needs and balance the system. Reclamation is also aware of the 2012 report entitled Lewiston Temperature Management Intermediate Technical Memorandum which did an initial review of several alternatives to reduce warming of water as it transits Lewiston Lake, including temperature control devices, removal of the dam, and installation of a canal. While some of these alternatives might warrant further review under a separate process, the ROC on LTO has addressed the Trinity River Division by continued implementation of the TRRP ROD. Finally, Reclamation determined that because there is no proposal for action related to Public Law 84386 (annual releases for the benefit of Humboldt County), there is insufficient information to evaluate potential effects.
15	5	Management standards - including use of best available scientific information – for the Trinity River Division and the restoration, preservation and propagation of the Trinity River fishery have been established through a series of legislative, administrative and judicial mandates. However, the DEIS findings are based on ill-informed, subjective and unpredictable methods. The document fails to provide necessary linkage between conclusions and the information on which they are based. In many instances there is little or no scientific information such as data, explicit analytical methods, citations to literature. Instead we see unsupported conclusions such as "... changes in river flows for	Please see refer to response to comment 15-20.

Ltr#	Cmt#	Comment	Response
		Alternatives 1 through 4 would have minor effects on water quality for the Trinity .." (DEIS p.1-3); "While maximum September water temperatures under the action alternatives would exceed recommended criteria for spawning and egg incubation, little salmonid spawning occurs in the Trinity River in September and adverse effects are not expected". (DEIS p.1-4). The text does not describe the criteria used to judge an effect as "minor". There is no explanation as to why qualitative terms such as "little spawning" are used when quantitative information is readily available (and which seriously undercuts the conclusion).	
15	6	Methods used to evaluate impacts to the Tribe’s fishery are at turns unjustified, as there are superior and up to date studies available through Reclamation and US Fish and Wildlife programs including the Trinity River Restoration Program (TRRP). Outdated or poorly documented justifications are substituted for state-of-the-art science, without explanation. Wrong information is presented as the foundations for conclusions.	Reclamation used the best available science throughout EIS. A variety of data were obtained for the environmental review process: quantitative data from peer-reviewed published literature on topics specific to fisheries and aquatic resources within the project area; peer-reviewed published literature outside of the project area but on topics to information relevant to the alternatives analyzed; unpublished qualitative data from within the project area and from outside the project area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available. Please see Master Response 7, Aquatic Resources, for additional discussion of the analysis conducted.
15	7	Modeling of flows and water temperatures in Trinity River is flawed, leading to faulty analyses of biological effects. The DEIS states flow releases from Lewiston Dam will not be impacted by the ROD to follow, regardless of alternative CVP/SWP operations, and predicts storage behind Trinity Dam to increase on average for all months (Alternatives 1-3), in comparison to No Action. In contrast, modeling output fails to align with these descriptions, projecting Lewiston-to-Trinity releases varying substantially from management under the 2000 ROD and water temperatures in violation of regulatory standards. Appendix O provides simulations of Lewiston Dam releases s that are not allowable [Endnote 7:The document should offer clear explanation of how disparate categorization of water supply conditions (i.e. water year typing) between the 40-30-30 Index and the Trinity ROD Index creates an appearance that Lewiston Dam releases to Trinity River are perhaps to change under the fully analyzed alternatives.] and temperature effects that cannot be regarded as accurate. Because modeling of water temperatures relies on wrong information from the flow model the water temperature model cannot provide information fit for use in following steps. Modeling outputs for flow and temperature strongly influence conclusions [Endnote 8: E.g. at Appendix O page 374	Reclamation has removed text stating that storage behind Trinity Dam will increase in Alternatives 1-3, as this is not shown in the DEIS modeling. Alternative 1 and the No Action Alternative (i.e. current operations) are generally at most 1 TAF different in end of month storages, and 53 cfs different in Trinity River flow releases (Table 1-1, and Table 12-1 in CalSim storage results in Appendix F). Alternatives 2 and 3 result in some lower storages in Trinity Reservoir than the No Action Alternative. Alternative 4 has some lower storages in Trinity Reservoir than the No Action Alternative in Wet year types. Water temperatures are within approximately 1 degree of the No Action Alternative for all alternatives and all water-year-type-month averages, except for October of Critical years, when some alternatives are up to 2 degrees different than the No Action Alternative. In the modeling, first the minimum flow requirements on the Trinity River are met. When the modeling shows flows below the minimum flow requirements and the fall flows, then that means there was not enough water in storage. When model results indicate flows higher than the ROD flows and the fall flows, that means there was a flood control operation. The small changes of 1 TAF and 53 cfs are due to changes in Shasta operations. Trinity imports to the CVP are driven by what

Ltr#	Cmt#	Comment	Response
		"Flows in above normal water years in February would increase by approximately 52% under Alternative 2 (801 cfs) compared to the No Action Alternative (528 cfs). This increase in flow could increase the likelihood of Spring-Run Chinook Salmon egg mortality due to redd scour .."] regarding effects to focal species. The analytical sequence stops short of a necessary step, that of judging the rationality of simulation outputs prior to taking the final step of interpreting biological impacts.	month it is and then how full Trinity and Shasta Reservoirs are. When Shasta storage changes enough to pull more water into the CVP, there is the potential to see a decrease in instream flows due to less flood control, and when less water is moved to the CVP, there is a potential for more flood control releases.
15	8	The DEIS fails to address the growing impact of fish disease in the lower Klamath [Endnote 9: E.g. Technical appendix O at top of page 123 downplays severity of conditions in lower Klamath River as "variable annually, with occasional Klamath River as "variable annually, with occasional high summer water temperatures and disease outbreaks known to be factors that can affect salmonid populations"] on Trinity River juvenile salmon, and sidesteps sophisticated analytical tools Developed by federal scientists and used by Reclamation in implementing the Trinity River Restoration Program. Incorrect information on trends in mitigation of lower Klamath fish disease [Endnote 10: "Management actions to reduce water temperatures and control disease outbreaks in the lower Klamath River have been successful and are expected to continue into the future.", Appendix O at top of page 124] embedded within the primary technical appendix for aquatic resources serves to bias summary conclusions in the main document. Considering fully the potential for wholesale impacts of Ceratonova shasta on Trinity River Coho, Chinook and Steelhead juveniles, predictions of continuing improvement under No Action are uncertain at best. We see these species to be at high risk due to annual epidemics.	Please see the responses to comments 15-34 and 15-37. As described in Chapter 3, Alternatives, the EIS includes as part of Alternatives 1-3 augmentation flows for the lower Klamath River, which are for the purpose of reducing fish disease in the lower Klamath River.
15	9	A majority of scientific information missing from the DEIS is available for use; for instance: the Trinity River Restoration Program Program Office in Weaverville maintains an online data portal [Endnote 11: https://www.re3data.org/repository/r3d100012119] that serves as a clearinghouse for data, reports and analytical tools such as their Decision Support System (DSS) which incorporates a model of fish production - Stream Salmonid Simulator [Endnote 12: https://pubs.usgs.gov/of/2018/1174/ofr20181174.pdf https://pubs.usgs.gov/of/2018/1056/ofr20181056.pdf] - specifically designed to simulate effects of varying Trinity River Division operations and consequent changes to flows, water temperatures, river flows, fluvial geomorphology, channel hydraulics, habitat availability and salmon life histories; a multitude of	Please see Master Response 7, Aquatic Resources regarding the aquatic analysis. See Master Response 6, Hydrologic Modeling and Surface Water Resources, for model justification. Refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding the use of best available science.

Ltr#	Cmt#	Comment	Response
		data and technical reports addressing effects of Ceratonova Shasta disease outbreaks are available online [Endnote 13: https://www.fws.gov/arcata/fisheries/reports/technical/2017%20Prevalence%20of%20Infection%20in%20Klamath%20River%20Basin%20Juvenile%20Chinook%20Salmon,%20Mar-Aug%202017.pdf https://www.ncbi.nlm.nih.gov/pubmed/30142293 https://microbiology.science.oregonstate.edu/content/monitoring-studies].	
15	10	Section 2.1 fails to mention federal listing of SONCC Coho salmon under the Endangered Species Act as among the factors conditioning diversions from Trinity River to the Sacramento River, and complicating Reclamation's ability to protect Sacramento River species.	While the ESA obligations for coho salmon are a complicating factor, this background section tries to address the major implications to water supply and operational flexibility. Regardless of whether coho is listed or not, the Trinity ROD decreased the amount of water Reclamation could bring from the Trinity River to the Sacramento River, reducing water supplies for Delta outflow and salinity and reducing the Shasta Reservoir coldwater pool flexibility.
15	11	Section 2.3 describes the Study Area as including "... Trinity Reservoir and the Trinity River downstream of Lewiston Reservoir .." creating confusion when in later sections the lower Klamath River is discussed. Figure 2.3-1 indicates that neither the Trinity nor lower Klamath are within the study area.	Please refer to Section 3.3.2.2 and 3.3.2.3 regarding the analysis of the Trinity and Klamath Rivers.
15	12	Section 3.3.2.1 includes the following description of seasonal operations "Reclamation maintains at least 600 TAF in Trinity Reservoir, except during the 10- 15% of water years when Shasta Reservoir storage is very low. These years do not have a specific threshold, but modified operations may be considered when storage in Shasta Reservoir is less than 2 MAF at the end of September and forecasted to continue falling". This fails to align with a distinguishing feature of CVP operations, that all water necessary for protection of Trinity in-Basin fisheries is explicitly reserved from CVP yield pursuant to authorizing legislation (P.L. August 12, 1955). Rather than Trinity carryover hinging on Shasta Reservoir levels, fishery needs in the Trinity have priority [PUBLIC LAW 386-AUG. 12, 1955]; for this reason Trinity carryover must necessarily be managed, first, to protect against potential warming of Trinity River above regulatory standards and fulfill water supply mandates to the Trinity basin in the 1955 TRD Act, [Public Law 84-386].	As stated in the Trinity River Restoration Program ROD, "Congress passed legislation authorizing the Trinity River Division (TRD) on August 12, 1955 (Pub. L. No. 84-386) (1955 Act). Although Congress authorized the TRD as an integrated component of the CVP, section 2 of the 1955 Act specifically directed the Secretary of the Interior to ensure the preservation and propagation of fish and wildlife in the Trinity Basin through the adoption of appropriate measures. ... The 1981 Andrus Decision concluded that the statutory and trust obligations of the Department of the Interior compelled the restoration of the Trinity River anadromous fishery to pre-TRD levels. Therefore, Secretary Andrus directed the Service to complete a 12-year study which would assess the effectiveness of flow and habitat restoration efforts and make recommendations on measures necessary to address the fishery impacts attributable to the TRD consistent with the Department's obligations. ... The Service and Hoopa Valley Tribe released the Trinity River Flow Evaluation Study (TRFES) in June 1999. The TRFES recommended specific annual flow releases, sediment management, and channel rehabilitation to create and sustain a dynamic alluvial channel that will provide the necessary habitat. [The TRRP ROD] adopts the recommendations contained in the TRFES, is based on the

Ltr#	Cmt#	Comment	Response
			extensive scientific studies contained in the TRFES, and is the most practical and scientifically based restoration strategy." All ROC on LTO alternatives include continuing to operate in accordance with the TRRP ROD.
15	13	Section 3.3.2.3 misrepresents the target for lower Klamath base flows, stating "These flows include a preventative base flow component of an augmented release of up to 40 TAF from Lewiston Dam over approximately 30 days, beginning on or about August 23, with the intent of meeting and/or maintaining an estimated target of up to 2,800 cfs in the lower Klamath River." The target is not flows ranging "up to 2,800 cfs" as presented in the DEIS. Instead the ROD establishes the target as a specific discharge, "… a preventive baseflow release that targets increasing the base flow of the lower Klamath River to 2,800 cfs .."	The text has been modified to state, "As stated in the Long-term Plan to Protect Adult Salmon in the Lower Klamath River ROD, these flows include '(1) a preventative base flow release that targets increasing the base flow of the lower Klamath River to 2,800 cfs from mid-August to late September to improve environmental conditions, (2) a one day preventative pulse flow (targeting 5,000 cfs in the lower Klamath River) to be used as a secondary measure to alleviate continued poor environmental conditions and signs of Ich infection in the lower Klamath River; and (3) a five-day emergency pulse flow (targeting 5,000 cfs in the lower Klamath River) to be used on an emergency basis as a tertiary treatment, to avoid significant die-off of adult salmon when the first two components of the Proposed Action are not successful at meeting their intended objectives.' The ROD also clarifies that 'The 2,800 cfs target flow release of the preventative base flow augmentation, and the 5,000 cfs target flow of the preventative pulse flow and emergency pulse flow augmentations are flow levels used as planning estimates. They may be adjusted if real-time observations or changes in understanding of the infection mechanics suggest these flow levels are more than that required to prevent a fish die off.'"
15	14	Section 3.4.8.1 (applicable to all Action Alternatives) in discussing governance and Reclamation’s consultation with fishery agencies in regards to compliance with ESA regulations, the section omits the unique role of the Hoopa Valley Tribe vis-à-vis the Trinity River. Specifically, the Tribe holds Co-Management authority alongside Interior consequent to P.L 102-575 Section 3406(b)(23) as follows "(A) By September 30, 1996, the Secretary, after consultation with the Hoopa Valley Tribe, shall complete the Trinity River Flow Evaluation Study currently being conducted by the U.S. Fish and Wildlife Service under the mandate of the Secretarial Decision of January 14, 1981, in a manner which insures the development of recommendations, based on the best available scientific data, regarding permanent instream fishery flow requirements and Trinity River Division operating criteria and procedures for the restoration and maintenance of the Trinity River fishery; and (B) Not later than December 31, 1996, the Secretary shall forward the recommendations of the Trinity River Flow Evaluation Study, referred to in subparagraph (A) of this paragraph, to the Committee on Energy and Natural	P.L 102-575 Section 3406(b)(23) discusses the Hoopa Valley Tribe's role in the Trinity River Flow Evaluation Study, which was completed in June 1999. Since that time, Reclamation has signed the TRRP ROD in 2000, and implemented these flows based on the TRFES. The Hoopa Valley Tribe retains a key role in implementation of the TRRP ROD as part of the Trinity Management Council.

Ltr#	Cmt#	Comment	Response
		Resources and the Select Committee on Indian Affairs of the Senate and the Committee on Interior and Insular Affairs and the Committee on Merchant Marine and Fisheries of the House of Representatives. If the Secretary and the Hoopa Valley Tribe concur in these recommendations, any increase to the minimum Trinity River instream fishery releases established under this paragraph and the operating criteria and procedures referred to in subparagraph (A) shall be implemented accordingly. If the Hoopa Valley Tribe and the Secretary do not concur, the minimum Trinity River instream fishery releases established under this paragraph shall remain in effect unless increased by an Act of Congress, appropriate judicial decree, or agreement between the Secretary and the Hoopa Valley Tribe."	
15	15	Table 3.4-1 omits under "Trinity" heading, any reference to WR Order 90-5 regulations. Should be edited to parallel language under “Sacramento” in other alternatives, i.e. "Operations to meet WRO 90-5 downstream temperature targets" as these are required for protection of both ESA-listed Coho salmon and the Tribe’s federally-recognized fishery, generally.	Water Right Order 90-5 states, "If the temperatures in the Trinity River exceed 56o F at the specified locations during the specified periods, permittee shall.... demonstrate that the exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River." EIS Section 3.3.2.1, Seasonal Operations for the Trinity River Division under the No Action Alternative, has been modified to add the following paragraph: "Reclamation would also continue to operate in accordance with water rights requirements, including Water Right Order 90-5, which states, ‘If the temperatures in the Trinity River exceed 56o degrees Fahrenheit at the specified locations during the specified periods,’ Reclamation shall ‘demonstrate that the exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River.’"
15	16	Section 3.7.2.1 describes flow releases from Buckhorn Dam that are described as beneficial to Coho Salmon. No scientific foundation is provided for this recommendation.	Reclamation would increase flow from the Buckhorn Dam outlet works to Grass Valley Creek for channel gravel mobilization and improve juvenile and adult migration.
15	17	Figure 4.1-3 is presented to illustrate points made within a paragraph that commences with discussion of coldwater releases to the Trinity from Lewiston Dam. However, the data presented are from a downstream location, Douglas City, where the effects of tributary accretions are substantial, serving to cloud the picture of Trinity River Division operations.	Figure 4.1-3 has been revised to use gage data for the Trinity River at Lewiston.
15	18	Section 4.1.1 states “The Trinity River downstream of Lewiston Dam, the lower Klamath River, and tributaries support several native anadromous fish species listed in Table 4.1-3, Focal Fish Species in the Trinity River region.” The table should not include American Shad, an invasive species.	Table 4.1-3 identifies fish species other than native. American Shad are included because of their (current or historic) tribal, commercial, or recreational importance. No changes to the EIS are needed.

Ltr#	Cmt#	Comment	Response
15	19	Section 4.1.1.1 states "Today, wild Coho Salmon are not abundant in the Trinity River ..". Estimates of abundance are available for comparison with historic conditions or for contrast with other systems in which wild Coho are "abundant". Information can be accessed through the various fish agencies. One example, the TRRP Office in Weaverville has in recent years evaluated Coho abundance, and TRRP reports and presentations are accessible through the Program's Online Data Portal.	The EIS has been revised to include information on Coho abundance in the Trinity River. This modification does not change conclusions identified in the EIS.
15	20	Section 4.1.1.2 describes September onset of spawning by Spring-run Chinook Salmon, which is in disagreement with summary conclusion ".. little spawning." On page 1-4. The fact is that Spring-run Chinook are gathering immediately prior to spawning and also spawning per se every year during the month of September, as described in DEIS Appendix O in section O.2.3.3.2 as follows: ".. usually peaks in October but typically ranges from the third week of September through November." The potential for negative effects of warm water on spawning salmon is evident from the analysis provided, and must be accurately disclosed. These impacts on the already-diminished stocks of salmon [Endnote 15: Appendix O describes drop in average return from 14,472 to less than 10,000 in recent years, citing Kier et al. (2017)] are of significant concern to the Tribe.	EIS Chapter 1, Section 1.3.2, Analysis Overview provides an overview of the analysis of project effects on aquatic resources, specifically discussing modeled changes to water temperature in the Trinity River and anticipated impacts to spring-run Chinook. As described in Chapter 4, Section 4.1.1.2, Spring-Run Chinook Salmon, some Trinity River spring-run chinook spawning occurs in the end of September, but peak spawning occurs in October. As described in Chapter 5, Section 5.9.1.1, Trinity River and Clear Creek, modeled maximum monthly water temperatures may increase slightly in September under Alternatives 1, 2, and 3 compared to the No Action Alternative. Alternative 1 has a modeled 1.7°C increase compared to the No Action Alternative in September, the month when some spring-run chinook spawning begins. However, modeled results also include decreased monthly maximum water temperatures for Alternative 1 of -5.1°C in October, compared to the No Action Alternative, when peak spawning occurs. Therefore, considering both the slight increase in water temperature in September and the larger decrease in water temperature in October, relative to peak spawning, overall there would be little or no potential for adverse effects relative to the No Action Alternative. Additionally, the HEC5Q model output data are maximum monthly temperature and the EPA (2003) temperature criteria for spawning uses a 7-Day Average of Daily Maxima; thus, the model output may not accurately represent the daily maxima upon which the USEPA (2003) criteria are based. The comparisons of the USEPA (2003) criteria to model outputs are only provided to allow a coarse-level comparative analysis between the alternatives. As described in Appendix O, Section O.2.3.3.2, Spring-Run Chinook Salmon, the average number of spawners in the Trinity River from 1991 to 2017 was of 14,472 (Kier et al. 2018). Since 2012, Spring-Run Chinook estimates for the Trinity River have been consistently less than 10,000 fish, with more than half of the fish being of hatchery origin (Kier et al. 2018). However, this does not signify a 50% decline, as the commenter suggested, because the run sizes

Ltr#	Cmt#	Comment	Response
			across the 1991 to 2017 period ranged from 2,381 to 47,795 spawners, with natural-origin returns below 10,000 spawners occurring periodically. See Table 5 and Figure 9 in Kier et al. (2018) for the complete 1991 to 2017 dataset and graphical depiction of the returns data. Please also refer to EIS Chapter 5, Section 5.9.1.1, Trinity River and Clear Creek, for more detailed discussion of the analysis, and to Master Response 7, Aquatic Resources, for discussions of comparison of model results to USEPA (2003) salmonid life history water temperature criteria.
15	21	Section 5.5.1 states a "detailed analysis" of potential effects on Indian Trust Asset fisheries is to be found in Appendix O. Appendix O, however, presents no such information. Instead this appendix provides a handful of declarative summary statements – some of which are misinterpretations of findings from outdated studies - thus revealing ignorance of easily obtainable science.	Appendix O, Section O.3, Evaluation of Alternatives, evaluates project-level effects on fisheries species, including salmonid populations, for each of the major river basins in the study area. The project-level effects to salmonid populations and habitat are also discussed in the EIS, Section 5.5.1, Project-Level Effects, by river/water body. Refer to these portions of the EIS and Appendix O for discussions of anticipated changes in flow, shifts in water quality (dissolved oxygen concentration and modeled water temperature), changes in habitat availability, and potential impacts to salmonid populations. Reclamation has strived to use the best available science throughout the EIS, consistent with the requirements of NEPA, and used its best efforts to find out and disclose what it reasonably can. Please refer to Master Response 5, Adequacy of Analysis and to Appendix O, Section O.3.1, Methods and Tools, for descriptions of modeling conducted in evaluating effects of the alternatives. See Section O.3.3, Alternative 1 – Project-level Effects, and Section O.3.4, Alternative 1 – Program-level Effects, for discussion of anticipated effects to salmonids. Section 5.5.1 has been updated to clarify that Appendix O provides detailed analysis of the potential impacts to salmonids as a result of the proposed project. Discussion of effects to on Indian Trust Asset fisheries and a more detailed discussion of all impacts on Indian Trust Asset resources is discussed in Appendix J, Indian Trust Assets.
15	22	Section 5.5.1.1, sidesteps USEPA criteria as well as State Board and TRRP science in dismissing impacts to the Tribe's fishery without defensible justifications: "Although the modeled maximum water temperatures in September and October under all alternatives would exceed the 55°F USEPA (2003) criteria for spawning, egg incubation, and fry emergence and could compromise salmonid	Reclamation has made updates to this section in response to your comment, changing text to state: "Modeled maximum water temperatures in September and October under all alternatives would exceed the 55°F USEPA (2003) recommendation for spawning, egg incubation, and fry emergence and could compromise salmonid reproductive success. In addition, modeled water temperatures in September under Alternatives 1-3 exceed the temperatures under the No Action. Modeled water temperatures in October under Alternatives 1 and 2 are lower than under the No Action Alternative, and water

Ltr#	Cmt#	Comment	Response
		reproductive success, there would be little or no potential for adverse effects relative to the No Action Alternative. While modeled maximum September temperatures under Alternatives 1-3 would exceed the No Action Alternative, little salmonid spawning occurs in September and the monthly model results may not accurately represent the daily maxima upon which the USEPA (2003) criteria are based"	temperatures under Alternative 3 are similar to under the No Action Alternative. Spawning by Spring-Run Chinook Salmon in the Trinity River commences in late September and peaks in October, while spawning by Fall-Run Chinook Salmon commences in October and peaks in November. Trinity River Coho Salmon primarily spawn in November and December, while Steelhead and Coastal Cutthroat Trout spawn from January–April and September – April respectively. Thus, although a relatively small proportion of the spring-run Chinook spawners that spawn in September would be negatively affected by increased water temperature, the majority of spring-run Chinook that spawn in October, and some fall-run chinook that spawn in October, would benefit from lowered water temperatures that month compared to the No Action Alternative. Additional supporting information is provided in Appendix O, Aquatic Resources Technical Appendix. Refer to Master Response 7, Aquatic Resources, regarding comparison of modeled water temperatures to water temperature criteria.
15	23	Section 5.9.1.1.1 states "The increased February flows in above normal water years under the action alternatives would not overlap substantially with the spawning and incubation period of other fish species of concern in the Trinity River below Lewiston Dam, so any effects would be negligible and potentially beneficial for migrating and holding steelhead because of increased habitat availability." It is not possible to trace the path from basic information to conclusions of biological effects, as no scientific justifications are provided either in the section itself or in Appendix O. The conclusion then immediately following "These same increases in flow could result in potential adverse effects on fry and juvenile Coho and Chinook salmon due to reduced habitat availability, however, the percent change in total WUA in this flow range is negligible (USFWS and Hoopa Valley Tribe 1999: 123)." is based on outdated simulations; in the intervening years, channel topography has evolved and modeling has advanced considerably.	Project-related effects identified in Section 5.9.1.1.2, Trinity River below Lewiston, are outlined in more detail in Appendix O, Section O.3, Evaluation of Alternatives. Although model results of the average flow in the Trinity River below Lewiston Dam are similar between all action alternatives when considering all water year types combined, there were some small differences observed in some months, which would have different effects, depending on species or life stage. The text in Section 5.9.1.1.2 has been revised to acknowledge the disagreement in the statement to read: “Model results illustrating the average flow in the Trinity River below Lewiston Dam for all water year types show no discernible difference among the action alternatives for most of the year, and a relatively small difference between the No Action Alternative and the action alternatives from December through March.” This modification does not change conclusions identified in the EIS.
15	24	At page 5-47 is found "While modeled maximum September temperatures under Alternatives 1-3 would exceed the No Action Alternative, little salmonid spawning occurs in September and the monthly model results may not accurately represent the daily maxima upon which the USEPA (2003) criteria are based." And then "While water temperatures under the action alternatives would equal or exceed the No Action Alternative in some months during this period, no adverse effects are expected" However, there is significant risk to	Please see response to comment 15-20.

Ltr#	Cmt#	Comment	Response
		Chinook Salmon throughout September, those spawning in the wild and those bound for Trinity River Hatchery. Spawning by Chinook salmon commences annually in September, and pre-spawn activity includes staging in areas below Lewiston Dam in the run-up to September spawning. There is no explanation of why the authors believe model results may not accurately represent the USEPA criteria or why such inaccuracy would be likely to overestimate rather than underestimate effects of warming; there appears to be no scientifically defensible basis for concluding negative effects on the Tribe's fishery are unlikely.	
15	25	At page 5-48 is found "Under Alternative 3… modeled maximum November water temperatures would substantially exceed both the USEPA (2003) criterion and the No Action Alternative, likely resulting in adverse effects on Fall-Run Chinook Salmon, Spring-Run Chinook Salmon, Coho Salmon…could substantially reduce spawning success and year class recruitment, but the expected frequency of occurrence cannot be determined using available modeling data and the likelihood of population-level effects is therefore uncertain". The analysis concludes adverse effects are likely, and potential risk to the fishery is of great concern to the Tribe, regardless of doubt regarding impacts to fish populations. It is the duty of the Trustee to err on the side of the beneficiaries.	There are two years in which November temperatures are more than a degree warmer, on average, at Below Lewiston under Alternative 3 compared to other scenarios: 1932 (59.3 F, 6 F warmer) and 1982 (52.6 F, 2 F warmer). The four scenarios show different flows at Below Lewiston in 1932, and Alternative 3's flows are the lowest. Flow has a negative correlation with temperature, so this is expected. As for 1982, October and November flows are equal for all non-NAA scenarios, so the reason for this discrepancy remains unclear. The spike in Alternative 3 temperature at Trinity River below Lewiston occurs due to very low Lewiston outflow in November, 1931. All other action alternatives approach this month with greater Lewiston storage, allowing cooler Trinity River temperatures. This an anomalous result due to a hard limit in the model. This is not indicative of what is possible in the real world. The modeling is adequate to characterize the trend and magnitude of impacts. The modeling is not adequate for describing all considerations and options available to an operator. Model results should not be used out of context, but rather presented as period, year class averages or exceedance levels. Single month and min/max results should be used in only limited ways. More broadly, Alternative 2 and 3 have fisheries impacts in several watersheds, as analyzed in the EIS in accordance with NEPA. While Reclamation has not yet selected an alternative, this document discloses the benefits and impacts of each alternative to different resource areas to inform Reclamation's decision making. Refer to Master Response 4, Alternatives Formulation, for further discussion on the development and range of alternatives included in the EIS.
15	26	Section 5.20.4 Indian Trust Assets consists of a mere two paragraphs, one describing the no action alternative, and the other summarizing effects of action alternatives. The Hoopa Valley Tribe and its federally-recognized fishery is not mentioned. Nor is the Tribe's unique role and relationship to the Secretary's management of the Trinity River fishery and the TRD established by the CVPIA in section 3406(b)(23) as well as the explicit trust responsibility to the	Reclamation agrees that the 2000 Trinity ROD is the current implementation of Reclamation's requirements under the 55 Act and various Secretarial decisions. All alternatives continue existing implementation of the 2000 Trinity ROD. In response to this comment, Reclamation has added clarity to the document to state that there would be no restoration implemented in Hoopa Valley Tribe reservations which is where the tribe has fishing rights. Additionally, any

Ltr#	Cmt#	Comment	Response
		Tribe in the section, which to our knowledge is unique in federal reclamation law. There is no explicit analysis of potential negative effects described earlier in the DEIS, however the text does describe effects analyses that were not completed for the DEIS "... may result in adverse effects to federally recognized Indian tribes that have fishing rights resulting from effects on salmonid populations. Those (sic) location of those activities are, at this time, are (sic) unknown and will be evaluated at a later date". This piecemeal approach to disclosure of effects violates the federal trust responsibility, including but not limited to by ignoring the mandates of the CVPIA's Trinity provision and the 2000 ROD on which it is based. The Tribe deems the 2000 ROD to be its 21st century treaty with the United States.	effects to Trinity River fisheries is consistent with those under the 2000 Trinity ROD and the No Action Alternative. The commenter has reviewed only the Cumulative Analysis for Indian Trust Assets. Please see Appendix J, Indian Trust Assets, for the complete discussion of ITAs (where the Hoopa Valley Tribe is identified as a federally recognized tribe) and the effects of the project on ITAs. Restoration activities were analyzed at a program-level in this EIS as they will undergo further refinement and appropriate environmental compliance at a later date when the specific plans are finalized. Please see Master Response 5, Adequacy of Analysis and Mitigation for a discussion the level of analysis in this EIS.
15	27	Section 6.4.1 illustrates the poor record of consultation between the Tribe and Reclamation. It has been nearly two years since the sole Government-to-Government consultation between federal partners and the Tribe was held. During that period, much work has occurred, and the schedule for completion was cut short by approximately 12 months. The federal-tribal meetings held in 2017, to address Trinity Management Council activities do not qualify as consultation under NEPA.	Reclamation is committed to Government-to-Government consultation between Native American tribes. In addition a meeting on December 12, 2017 with the representatives from the Yurok and Hoopa Tribal Governments to discuss the 3-track process and including Trinity River in the project, Reclamation has conducted meetings with the Trinity River ROC Band (January 4 and 5, 2018) and the Trinity Management Council (March 28, 2018 and September 5, 2018) to discuss project issues.
15	28	Appendix O: Content in Appendix O falls well short of providing information necessary in connecting data and modeling output with interpretations of biological impacts on the Tribe's fishery. Generally, the text lacks detail of methods used to analyze potential impacts, and repeatedly references out of date material such as the Trinity River Flow Evaluation Study Final Report [Endnote 16: Multiple citations of "USFWS (1999)" lead to no such listing in References section. We suspect that these citations are to U.S. Fish and Wildlife Service and Hoopa Valley Tribe (1999) https://www.fws.gov/arcata/fisheries/reports/technical/Trinity_River_Flow_Evaluation_-_Final_Report_Full_Version.pdf] rather than more recent studies. In many places where Appendix O is referenced as containing "detailed" analyses of fishery impacts (e.g. Section 5.1 "Indian Trust Resources") while in fact the appendix contains conclusions presented without scientific justification (no data, no modeling output, and no citations).	Please refer to response to Comment 15-21 regarding Reclamation's use of best available science and evaluation of impacts included in the EIS and Appendix O. See Appendix O, Section O.3.1, Methods and Tools, for description of models used to evaluate the alternatives' impacts to salmonid habitat and populations. Model results are discussed and are shown in tables and figures in the EIS, Section 5.9, Aquatic Resources, and in Appendix O, Section O.3, Evaluation of Alternatives. The USFWS (1999) citation referred to by the commenter is listed in Appendix O, Section O.4, References, as "U.S. Fish and Wildlife Service (USFWS). 1999. Trinity River Flow Evaluation Final Report." Please also see Master Response 5, Adequacy of Analysis and Mitigation for additional information.
15	29	Section O.2.3.3.2 sets forth information on timing of spawning by Spring-run Chinook Salmon as "... usually peaks in October but typically ranges from the	Please see response to comment 15-20.

Ltr#	Cmt#	Comment	Response
		third week of September through November." This argues directly against conclusions in the DEIS at page 1-4 where impacts of warming flows in September are of little concern. The text continues with internally contradictory statements that the Spring-run Chinook population has been both "fairly stable" over the past 30 years (average 14,472) while also showing a 50% decline (to less than 10,000) since 2012.	
15	30	Section O.3.2.1.1 describes management of carryover storage behind Trinity Dam, stating "End-of-water-year carryover in dry and critically dry water year types is addressed on a case-by-case basis to help conserve cold-water pools and meet water temperature objectives on the upper Sacramento and Trinity Rivers ..." However, as section 2 of the 1955 TRD Act and the 2000 and 2017 RODS establish, protection of Trinity River is the priority for use of TRD water [Endnote 17: State of California Water Resources Control Board, WR Order 90-5 proscribes against managing Sacramento River temperatures via Trinity Diversions when to do so is injurious to Trinity fish.].	As described in Chapter 3, Alternatives, all alternatives include the operation of the Trinity River system according to the 2000 Trinity ROD and 2017 Lower Klamath ROD, which implements Reclamation's obligations under the 1955 Act and Secretarial decisions, and was designed to meet temperature requirements in the Trinity River as well. Please also see response to comment 15-13.
15	31	At page O-106 under heading "Coho Salmon" is written "Monthly average flows are typically at or above 300 cfs to maximize physical habitat for Coho Salmon spawning in November and December when the majority of spawning occurs, except in critically dry years when average monthly flows in November are expected to be 275 cfs." Flows of 300 cfs do not nearly "maximize" physical habitat for spawning, and cannot be accurately described as such; flows below 300 cfs have not been permitted for release from Lewiston Dam for many years, the model misinforms.	The text in the EIS has been changed as follows: "Monthly average flows are typically at or above 300 cfs to provide physical habitat for Coho..." This modification does not change conclusions identified in the EIS.
15	32	At page O-107 under heading "Steelhead (Winter-Run and Summer-Run)". Flows of 300 cfs do not nearly "maximize" physical habitat for spawning, and cannot be accurately described as such.	The text has been updated by removing the word “maximize” to more accurately characterize the flows as providing physical habitat. This modification does not change conclusions identified in the EIS.

Ltr#	Cmt#	Comment	Response
15	33	Section O.3.2.1.3 in contrasting regulatory requirements of the State Water Resources Control Board with predicted water temperatures in releases from Lewiston Dam the following appears "..modeled maximum temperatures would exceed the temperature objectives in July, September, and October (Figure O.3-4 and Table O.3-2)." Impacts of warming in September and October (on spawning salmon) are discussed elsewhere. Later in this section, a page O-10 we find "Elevated temperatures in these months may affect juvenile Coho Salmon which rear in the Trinity River year-round.", and then a dismissal of meaningful impacts, to wit "There would be no difference in the implementation of seasonal operations in the Trinity River between the No Action Alternative and current conditions. Therefore, continued implementation under the No Action Alternative would likely continue to benefit Coho Salmon by maintaining water temperature improvements". However, the simulated variation in water temperatures is based on CalSim II input to the water temperature model; these are sequential simulations. Variable temperatures may only be driven by variations in CalSim depictions of alternative operations. If seasonal operations do not vary, how does CalSim produce variable operations that drive variable thermal effects?	There are small differences in storage and flows in the Trinity River in response to changes in Sacramento River operations under the Action Alternatives, and the No Action Alternative differs from the current operations in that it includes a modified hydrology based on climate change to 2030. In the modeling, first the minimum flow requirements on the Trinity River are met. When the modeling shows flows below the minimum flow requirements and the lower Klamath River fall flows, then that means there was not enough water in storage. When model results indicate flows higher than the ROD flows and the fall flows, that means there was a flood control operation. Small changes between alternatives of approximately 1 TAF and 53 cfs are due to changes in Shasta operations. Trinity imports to the CVP are driven by what month it is and then how full Trinity and Shasta Reservoirs are. When Shasta storage changes enough to pull more water into the CVP, there is the potential to see a decrease in stream flows due to less flood control, and when less water is moved to the CVP, there is a potential for more flood control releases. Please also see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
15	34	At page O-113 is discussion of effects on salmon from beyond operations of the Central Valley Project. Missing from this section is information on the effects of disease in the lower Klamath River, effects that impact anadromous salmonid juveniles as they prepare to enter the ocean. Two organisms are at play in increasingly severe outbreaks, Ceratonova shasta and Parvicapsula minibicornis. C. shasta is the organism directly injurious to the fish, while P. minibicornis is an intermediate host necessary for completion of the C. shasta lifecycle [Endnote 18: Multiple technical reports are available, including the following: https://www.fws.gov/arcata/fisheries/reports/technical/2018/Prevalance%20of%20Infection%20in%20Klamath%20Juvenile%20Chinook%20Final%20KR18%20Report%201-23-19.pdf] [https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/PCFFA&IGFR/part2/pcffa_154.pdf]. Potentially Reclamation’s Klamath Irrigation Project will be required to release flows greater than in recent years, including those in 2019, to protect Klamath	The EIS was updated to include a section (Section O.2.3.5) discussing fish diseases in the Trinity River Section. This modification does not change conclusions identified in the EIS.

Ltr#	Cmt#	Comment	Response
		River fishes. Potentially, joint high-flow release operations of Klamath Irrigation Project and Trinity River Division of the CVP may be required in the future to protect the Tribe's fishery from collapse.	
15	35	At page O-115 is discussion of channel rehabilitation construction projects that are used by the Trinity River Restoration Program to help in restoring native fish populations. The information is out of date in terms of its description of side channel construction. At present, construction designs continue to incorporate overflow channels among floodplain features, including those inundated seasonally and few designed to flow at baseflow. However, side channels are no longer a principal design feature. Instead the designs are intended to enable geofluvial processes to reinitiate across the channel floodplain complex at higher flows. Floodplain and riparian connectivity are primary targets of the designs.	Section O.3.2.1.4 has been revised to include a description of more recent restoration activities: "During Phase 1, channel rehabilitation designs evolved to improve the performance of projects in achieving ROD restoration objectives, including: increasing the number of side channels, incorporating large wood, encouraging lateral channel migration, creating a more sinuous channel pattern, and promoting floodplain connectivity and diversity (Hoopa Valley Tribe et al. 2011: 4)." This modification does not change conclusions identified in the EIS.
15	36	At page O-116 under heading "Coho Salmon" the authors conclude habitat conditions are "likely to improve... for Coho Salmon under the No Action Alternative compared to current conditions." This conclusion is not scientifically justifiable when considering the entire freshwater lifecycle of Coho. All Coho are obliged to use the lower Klamath River for a period of days to weeks on their way to the ocean as pre-smolts, and there they face a known threat of infection from C. shasta. In recent years, research (see notes re: O-113 above) has shown that "hot spots" for infection of salmonids including Coho Salmon have extended down the Klamath River to sampling areas below the Trinity River confluence. Trinity River Coho that become infected are at risk of succumbing to lethal as well as sub-lethal effects of disease, and the trend is for a worsening of conditions. The same facts apply to conclusions regarding habitat for native anadromous salmonids throughout the sections following. The impact of worsening disease outbreaks foretells a descendant inclination.	The No Action Alternative is the current operations but evaluates conditions throughout the future (through the 2030 timeframe of this document). Therefore, after another 10 years of Trinity River Restoration Program (TRRP) projects, habitat conditions would be expected to improve. However, as noted by the commenter, disease pressures could change. Appendix O, Section O.3.2.1, Trinity River, has been updated to include discussion of disease as a factor affecting future conditions of salmonids in the Trinity River, with acknowledgement of the uncertainty in how disease prevalence will affect future conditions. Please also see responses to comments 15-34 and 15-37.
15	37	At page O-122 under "Potential changes... not included in the Trinity River ROD" is a list of factors "most likely"" to impact future fishery resources in the Trinity River compared to current conditions. However, the list fails to identify the hierarchy of threats, or the worsening trend of sub-lethal and lethal impacts of disease on anadromous salmonids of all species as they traverse the lower Klamath River (see references to C. shasta in notes above).	Please see the response to comment 15-34, above. The EIS was updated to include a section (Section O.2.3.5) discussing fish diseases in the Trinity River Section. The purpose of this section is not to identify a hierarchy of threats, but rather to give an overall picture of changes likely to occur under the NAA (i.e. in the future under the current operations). This modification does not change conclusions identified in the EIS. See Master Response 3, Baseline and No Action, regarding the No Action Alternative.
15	38	Section O-3.7.1.1 provides summary information regarding water temperatures in Trinity River. Given CalSim simulations that project higher average monthly	There are changes in Trinity Reservoir storages and flows which drive changes in temperature between the alternatives. In the modeling, first the minimum

Ltr#	Cmt#	Comment	Response
		storage behind Trinity Dam for every Action Alternative, conclusions such as follows do not seem logical: "Maximum modeled water temperatures in the Trinity River downstream of Trinity Dam are generally similar under Alternative 3 compared to the No Action Alternative except in August when temperatures would be approximately 6°F higher and September when temperatures would be approximately 2°F higher under Alternative 3. October temperatures would be approximately 4°F lower under Alternative 3 compared to the No Action Alternative." The internal model mechanisms driving higher release temperatures from a Reservoir with equal or somewhat greater coldwater pools are not explained, nor are they intuitive; such information is crucial to understanding and interpreting the temperature simulations.	flow requirements on the Trinity River are met. When the modeling shows flows below the minimum flow requirements and the fall flows, then that means there was not enough water in storage. When model results indicate flows higher than the ROD flows and the fall flows, that means there was a flood control operation. The small changes of 1 TAF and 53 cfs are due to changes in Shasta operations. Trinity imports to the CVP are driven by what month it is and then how full Trinity and Shasta Reservoirs are. When Shasta storage changes enough to pull more water into the CVP, there is the potential to see a decrease in instream flows due to less flood control, and when less water is moved to the CVP, there is a potential for more flood control releases.
15	39	At page O-502 under discussion of Coho Salmon there appears the following: "Flows in above normal water years in February would increase by approximately 52% under Alternative 3 (801 cfs) compared to the No Action Alternative (528 cfs). This increase in flow could increase the likelihood of Coho Salmon egg mortality due to redd scour, potentially resulting in reduced incubation success in areas where local conditions contribute to substantial mobilization of gravel in the redds". Studies of geofluvial process thresholds conducted by the Hoopa Valley Tribe and published in 1997 [Endnote 19: https://www.fws.gov/arcata/fisheries/reports/technical/Trinity_River_Channel_Maintenance_Flow_Study_Final_Report.pdf] established thresholds for generalized movement of channelbed gravels and small cobbles are exceeded at flows above 3,000 cfs. Therefore, concerns of redd scour probabilities increasing under the simulation scenarios are unfounded.	Section O.3.7.1.1 of Appendix O of the EIS has been revised to include a clarification of sediment mobilization conditions: "This increase in flow is not expected to result in redd scour based on previous studies in the Trinity River which reported sand and gravel substrates became mobile at flows around 2,700 cfs or greater (McBain and Trush 1997)."
15	40	At page O-638 alleged justification for magnitude of pulse flow releases from Buckhorn Dam is presented. However, there is no citation to studies supporting the claim that such flows "would provide a depth ≥ 0.6 ft at riffle crests in the outlet channel to aid with migration and predation avoidance"	Part of Alternative 1 is to provide ≥0.6 ft depth at riffle crests in the outlet channel for 600 ft downstream from the outlet works and a ≥10 cfs flow increase at USGS gage 11525630, located near the mouth of GVC as part of the proposed fall flows. Reclamation has no hydraulic modeling to identify the flow thresholds that would result in these conditions.
15	41	Section O-3.13 "Cumulative Effects:" this section and O-3.13.1 describes anticipated cumulative effects, including those relating to the Trinity River Restoration Program (TRRP). At O-3.13.1 is the following supposition "In the long term, however, the net effects are expected to include substantial improvements in river habitat conditions and conservation or recovery of special-status fish populations". No scientific justification for the conclusion is provided. In contrast, a mid-Program review conducted by the TRRP Science Advisory Board [Endnote 20: http://www.trrp.net/library/document/?id=2172]	The Cumulative Effects section evaluates Alternative 1 when added to other past, present, and reasonably foreseeable future actions, such as the Klamath Basin Restoration, which strives to improve water quality in the Klamath River and restore anadromous fish runs, and the Trinity ROD, which includes fisheries restoration. Also see Appendix Y, Cumulative Methodology, which includes a more comprehensive list of projects considered for Cumulative effects.

Ltr#	Cmt#	Comment	Response
		found evidence of improvements inconclusive. Furthermore, the combined negative effects of disease outbreaks among juvenile Trinity-origin salmonids in lower Klamath River and progressive impacts of climate warming advise a more likely long-term scenario - in which already-diminishing fish stocks continue to decline.	Please see response to comment 15-34 regarding a discussion of disease. Additionally, all scenarios are simulated at ELT (Early Long-Term) Q5 with 2030 climate change in the modeling (see also Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding a discussion of Climate Change. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
16	1	DEIS Fails to meet the National the National Environmental Policy Act The DEIS fails to meet the legal requirements of the National Environmental Policy Act ("NEPA"), because it does accurately describe the project alternatives and impacts, nor does it adequately analyze CVP project effects on Indian Assets (DEIS 5.20.4 5-121). The DEIS should closely examine effects on natural resources, ecological function, economics, social, health and assess direct, indirect and cumulative long-term impacts to Indian Assets associated with CVP operations.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Reclamation has included, to the extent possible, an evaluation of the ITAs in the project area. There are not anticipated to be any of the listed impacts to ITAs in the project area in the life of the project or cumulatively as the impacts to salmon are minimal and there is no anticipated impact to land and property of the ITAs. Additional information on effects to aquatic resources relevant to ITAs can be found in Appendix J, Indian Trust Assets.
16	2	The Bureau of Reclamation fails to assess the potential environmental impacts of the CVP contracts and consider alternatives to reduce adverse environmental impacts.	Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS and Master Response 4, Alternatives Formulation, regarding the range of alternatives analyzed for the Draft EIS.
16	3	CVP State Contractors & Water Allocations The CVP is one of the world largest water projects and supplies water to more than 250 long-term water contractors extending from Shasta County in the north to Kern County in the south. The majority of the CVP water goes to agricultural uses (CA Water Plan Update 2013). In 2019, most CVP contractor groups were allocated 100% of their maximum contracted amounts (Central Valley Project, Issues and Legislation, Congressional Research Service 2019). Therefore an increase of allocation would be outside of negotiated usage. California stakeholders coordinate usages so the beneficial uses for all can be taken under consideration.	Reclamation will operate the CVP in accordance with all applicable state and Federal laws and existing contracts. Please see Section 3.2.4, Allocation and Forecast, of the EIS for a discussion of the water allocation process.
16	4	CVP project operations have already altered natural river flow upon which California Tribal communities have and continue to rely on since time	This EIS does not propose any additional alterations to the natural river flow which would be detrimental to fish passage. Please see Appendix O, Aquatics,

Ltr#	Cmt#	Comment	Response
		immemorial. Further impacts would imperil tribal usages of the river system, and traditional subsistence because fish passage would be deleteriously affected.	for a detailed analysis of impact to aquatic species. Please see Appendix J, Indian Trust Assets for addition information on the project's impacts on federally recognized tribes.
16	5	Increased removal of water from the system would ruin California's fishing industry on which our state relies.	Appendix Q, Regional Economics Technical Appendix qualitatively discusses potential fisheries-related changes to the regional economy. Potential effects are not the same across all alternatives. As discussed in Sections Q.2.4.1.3 and Q.2.5.1.3, the potential reduction in salmon population under Alternatives 2 and 3 could have a detrimental impact to the regional economy. As discussed in Sections Q.2.3.1.3 and Q.2.6.1.3, under Alternatives 1 and 4, there would be an overall increase in salmon population that would be beneficial to the regional economy.
16	6	Winters & Tribal Water Rights When tribal lands were reserved, their natural resources were also reserved for tribal use. Winters v. U.S. case, established that sufficient water was reserved to fulfill the uses of a reservation at the time the reservation was established. The decision did not indicate a method for quantifying tribal water rights (Winters rights also hold their validity and seniority over state appropriated water whether or not the tribes have put the water to beneficial use). The 1963 U.S. Supreme Court decision Arizona v. California reaffirmed Winters and established an irrigation quantification standard. The classification of "agricultural potential" for quantifying Tribal water needs and uses does not provide a complete picture of tribal water requirements. The classification fails to account for Tribal water needs are for instream flows and other water bodies that support environmental and cultural needs for fishing, hunting, and trapping (CA Water Plan Update 2013).	The comment is outside the scope of this EIS and NEPA. No further response is required.
16	7	"New Yields" for Tribal Communities & Water Storage Projects Tribal communities continue to face a complexity of political and topographical issues, a result of lands dispossession and California water policy. Many California Tribes residing within the boundaries of the CVP are without adequate surface and groundwater supplies and are left without water to meet basic needs. Tribal communities are affected by ongoing environmental justice issues that result from poor water quality, reliability, and inadequate supplies to support safe and clean drinking water and sanitation, a basic human right (UN General Assembly Resolution 64/292. California Assembly Bill 685adopts this concept as an individual right).	Reclamation operates in accordance with all applicable state and federal laws. Please see Master Response 1, Responses to General Comments, regarding CVPIA and the need to achieve a reasonable balance among competing demands for use of Central Valley Project water, including the requirements of fish and wildlife, agricultural, municipal and industrial and power contractors. The EIS Section 5.2 addresses potential impacts to water quality, Section 5.3 addresses potential impacts to surface water supplies, Section 5.4 addresses potential impacts to groundwater resources, Section 5.5 addresses potential impacts to Indian Trust Assets and Section 5.20.14, addresses potential cumulative impacts to Environmental Justice communities.

Ltr#	Cmt#	Comment	Response
		Many California Tribes face disparity with little opportunity to maintain basic economic standards or plan for future economic development. Studies of the causes of disparity in the level of economic development between the wealthiest countries and the poorest can be attributed to the availability of water (Water and economic development: The role of variability and a framework for resilience Casey Brown and Upmanu Lall). While water allocations to State contractors are maintained for outdated water intensive agricultural and livestock practices, adequate instream flows for fish and wildlife become non-existent. Unprecedented fish kills and degraded habitat conditions contribute to the loss of cultural continuance, impacting traditional lifeways and tribal beneficial uses for traditional cultural use and subsistence fishing. In addition to, other unquantifiable cultural impacts to native people that result from limited access to traditional hunting grounds and habitat vital for ceremonial practices.	
16	8	Endangered Species Affected by CVP Operations In August 2004, a first draft report by the National Oceanic and Atmospheric Administration's (NOAA) fisheries concluded that OCAP (known as the Operations, Criteria, and Plan or OCAP) was "likely to jeopardize the continued existence of, “Sacramento River winter-run Chinook salmon (Oncorhynchus tshawytscha), Central Valley spring-run 3 Chinook salmon (Oncorhynchus tshawytscha), California Central Valley steelhead (Oncorhynchus mykiss), and the Southern Distinct Population Segment of North American green sturgeon (Acipenser medirostris). Also, Delta smelt, are susceptible to entrainment in CVP and SWP pumps in the Delta. The U.S. Fish & Wildlife Service (FWS) and National Marine Fisheries Service (NMFS), have issued federal Biological Opinions on the coordinated operation of the CVP and the SWP. In addition, both agencies have undertaken formal consultation on proposed changes in the operations and have concluded that the changes, including increased pumping from the Delta, would jeopardize the continued existence of several species protected under ESA. The NMFS Biological Opinion provided a “Reasonable and Prudent Alternative (RPA)” that would allow the Central Valley Project and State Water Project to operate in compliance with the ESA. The RPA includes an evaluation of the potential reintroduction of Federally listed Chinook salmon and steelhead to historical habitats (Draft EIS for Shasta Dam Fish Passage Evaluation.	Endangered species are described in the EIS by major basins; see Chapter 4, Affected Environment. Also see Appendix O, Aquatic Resources, Section O.2, Background Information for descriptions of fish and aquatic species evaluated in the EIS. Changes to habitat for salmonids is discussed in the EIS in Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources. Refer to Appendix O, Section O.3, Evaluation of Alternatives, for discussions of project-level and program-level effects evaluations for salmonids and other aquatic species. Please see Master Response 2, Related Regulatory Processes, regarding the BA and BO processes.

Ltr#	Cmt#	Comment	Response
		https://www.federalregister.gov/documents/2017/06/15/2017-12398/draft-environmentalimpact-statement-for-shasta-dam-fish-passage-evaluation-california In July of 2019, NMFS issued a new Biological Opinion for ESA impacted by the CVP, in response to the re-initiation of consultation on long-term operations. The document concluded that all "Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and California Central Valley steelhead would be jeopardized and critical habitat would be adversely affected, lost or destroyed. https://www.documentcloud.org/documents/6311822-NMFS-Jeopardy-Biop-2019-OCR.html 75 percent of California's prime salmon and steelhead spawning habitat disappeared from the Upper Sacramento River Watershed with the creation of Shasta Dam. The Winter-run chinook salmon lost access to the cold, spring-fed waters within the Pit River and McCloud Watersheds. It is imperative that adequate flows and habitat be sufficiently maintained to ensure the survival of anadromous fish, critical habitat and other ESA identified within the recent NMFS Biological Opinion. Salmon are critical species and are already facing severe threats. Removing water from this system would cause irreparable harm to these struggling species.	
16	9	Salmon habitat restoration and salmon reintroduction efforts should take precedence throughout California as required mitigation for long-term CVP operations. Mitigation efforts for maintaining project operations should include the prioritization of financial resources to support Klamath Dam removal habitat restoration and fish passage structural improvements. In addition to continued planning for the Shasta Dam Fish Passage Evaluation (SDFPE), and potential reintroduction of Federally listed Chinook salmon and steelhead to historical habitats, such as the reintroduction winter-run and spring-run Chinook salmon and steelhead to tributaries above Shasta Dam https://www.usbr.gov/mp/bdo/docs/sdfpe-eis-scopingreport-2017.pdf.	Habitat restoration and/or Chinook reintroduction (to Battle Creek) is part of several alternatives in the EIS, as described in Chapter 3, Alternatives. Effects of implementation of the alternatives are analyzed in the fisheries and aquatic resources section of Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources, and in Appendix O, Aquatic Resources, Section O.3, Evaluation of Alternatives. The issues of additional mitigation efforts such as Klamath Dam removal habitat restoration and fish passage structural improvements, Shasta Dam Fish Passage Evaluation, and potential reintroduction of Federally listed Chinook salmon and steelhead to historical habitats such as to tributaries above Shasta Dam are beyond the scope of the EIS. See Master Response 1, Responses to General Comments, regarding project objectives, purpose, and need. Also, refer to Master Response 4, Alternatives Formulation, regarding development of the alternatives and inclusion of habitat restoration components and mitigation.
16	10	California wildlife refuges provide valuable wetland habitat for migratory birds and other species, they are home to multiple state and federally-designated	As stated in Section P.2, Evaluation of Alternatives, flow changes resulting from the project are expected to result in very minor effect on plants and

Ltr#	Cmt#	Comment	Response
		wildlife refuges north and south of the Delta. Water supplies for optimal wetland habitat development and species requirements should be maintained.	wildlife, other than bank swallow, which does not occur in wildlife refuges north and south of the Delta. In addition, habitat restoration is proposed as part of the project, which will increase the amount of wetland habitat available in the project area and result in a net benefit for migratory birds and other species that occur in California wildlife refuges.
16	11	The State of California has a long history of coordinating SF Bay Delta water exports and has management plans that have worked in a coordinated way with federal water projects. These management plans, and coordinated efforts should not be ignored. For example, in recognition that Bay Delta was in peril and on the brink of collapse the California Legislature enacted the Delta Reform Act in 2009 to address existing Delta policies that were “not sustainable.” The Delta Reform Act was meant to advance “coequal” goals of restoring the Delta ecosystem and ensuring water supply reliability. Eight objectives were identified, of which were the goals to: a) Protect and enhance the unique, cultural, recreational, and agricultural values of the California Delta as an evolving place. b) Restore the Delta ecosystem, including fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem, c) Promote statewide water conservation, water use efficiency and sustainable water use, d) Improve the water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta.	See Master Response 1, Responses to General Comments, regarding Project objectives purpose and need; relationship to other ongoing plans, programs or policies; and water rights. As described in Master Response 1, Alternative 1 includes operating in accordance with all of Reclamation’s water rights permits and licenses, as well as obligations under SWRCB Decision 1641 which requires releases of water for meeting water quality standards to beneficial uses in the Delta. Also refer to Master Response 2, Related Regulatory Processes, regarding the Biological Opinion on the CVP, and refer to Master Response 4, Alternatives Formulation, regarding development of the alternatives.
16	12	Recommendations for inclusion into Long-term Operations Plan for the CVP: Long-term operations plan for the CVP that include California Tribes in source, footprint and receiving waters for the development of the CVP, and especially for any water transfer from this system, for any “new” reservoir and/or water storage projects that support Tribal water contracts for “new water yields” for tribes to satisfy adequate surface and groundwater supplies to meet tribal needs for the continuation of traditional species of fish to support Tribal Subsistence Fishing (T-SUB), beneficial uses, and Tribal Traditional Culture (CUL) uses.	Please see response to comment 16-11.
16	13	Recommendations for inclusion into Long-term Operations Plan for the CVP: Reclamation dedicate water yields to provide sufficient water for instream flows to protect anadromous fish, ESA and water quality for fish and wildlife.	Please see response to comment 16-11.
16	14	Recommendations for inclusion into Long-term Operations Plan for the CVP:	Please see response to comment 16-11 and 16-9.

Ltr#	Cmt#	Comment	Response
		Salmon habitat restoration and reintroduction of Federally listed Chinook salmon and steelhead to historical habitats should be expanded and prioritized. This is an economic resource for the state of California and the nation as a whole. Working in coordination with California Tribes and state agencies.	
16	15	Recommendations for inclusion into Long-term Operations Plan for the CVP: Increase water allocations for wildlife refuges that provide valuable wetland habitat for migratory birds and other protected species north and south of the Delta.	Please see response to comment 16-10 regarding the sufficiency of water allocations in California wildlife refuges.
16	16	Recommendations for inclusion into Long-term Operations Plan for the CVP: Tribal engagement and formal consultation between FWS and NMFS on proposed changes in CVP operations that jeopardize the continued existence of several species protected under ESA should include affected Tribal Governments, this includes tribes in the source and receiving waters.	Please see response to comment 16-8. Tribal engagement between FWS and NMFS for the purposes of ESA compliance is beyond the scope of NEPA and the analysis in the EIS. Please also see response to comment 16-12.
16	17	Recommendations for inclusion into Long-term Operations Plan for the CVP: Legislative requirements should be developed and applied mandating CVP State water contractors to assess and consider tribal water needs in water management and work activities.	Please also see response to comment 16-11.
16	18	Tribal Consultation Reclamation has distinct and unique obligations toward Tribes based on fiduciary trust responsibility, treaty provisions, and statutory mandates. Executive Order #13175 (2000) governs consultation and coordination with Indian Tribal Governments and acknowledges that the United States recognizes the right to Indian Tribes to self government and supports tribal sovereignty and self-determination. California Tribes continue to manage and maintain jurisdiction over waters and resources within the CVP project boundary. Currently CA water management carries unresolved Native claims involving lands and resources under Native jurisdiction, water projects continue to propose projects and programs that impact Native communities and governments (thus requiring consultation and collaboration with Tribes by federal executive order). Other pertinent documents that outline the unique obligations toward Tribes based on fiduciary trust responsibility, treaty provisions, and statutory mandates. - Department of the Interior Policy on Consultation with Indian Tribes (2011) - Department of the Interior Secretarial Order 3317	A description of tribal consultation activities conducted as part of the development of the EIS is provided in Chapter 6, Other NEPA Considerations. Additional documentation of coordination activities is provided in Appendix Z, ROC on LTO Consultation and Coordination.

Ltr#	Cmt#	Comment	Response
		- Bureau of Reclamation Implementation Plan for Federal Government-to-Government Policy (1996) - Bureau of Reclamation Protocol Guidelines on Consulting with Indian Tribal Governments (2012) - State of California Executive Order B-1011 (2011) https://www.usbr.gov/native/policy/policy_protocol.html We urge you to consider the above considerations and incorporate them into the long-term operations plan for the CVP.	

Ltr#	Cmt#	Comment	Response
17	1	Regulatory Setting: Through the Delta Reform Act, the Delta Stewardship Council is granted specific regulatory and appellate authority over certain actions that take place in whole or in part in the Delta and Suisun Marsh, which are referred to as “covered actions”. The Council exercises that authority through the Delta Plan. Projects that are solely carried out, approved, or funded by the federal government are not considered covered actions. However, discretionary projects, plans, and programs carried out by state or local agencies may be covered actions required to demonstrate consistency with 14 regulatory policies identified in the Delta Plan. In the Final Environmental Impact Statement (Final EIS), please include a description of the Council’s regulatory authority, the Delta Plan, and the applicable regulatory policies for non-federal projects in the Delta. In addition, the Final EIS should acknowledge the potential that a certification of consistency with the Delta Plan may be required for any components of the project description that would be carried out by a state or local entity.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments for a discussion regarding the applicability of the Delta Reform Act to Federal agencies. As the commenter states, Federal projects are not considered covered actions. Compliance with the Delta Reform Act and the Delta Plan are applicable to the state and local entities and are not applicable to this project. Therefore, the requested text has not been included in the EIS.
17	2	Identification and Consideration of Alternative Components: In Appendix D, Chapter 3, Alternative Development Process (Draft EIS, page 3-2), Table 3.1-1, Component Screening Results, lists potential components of the No Action Alternative and the four project alternatives (proposed alternatives), including a description, notes, screening criteria, and reasons to screen out each component. The following should be reconsidered and included as components of the proposed alternatives within the Final EIS: Recalculate flood curves (Draft EIS, Appendix D, page 3-2) – this component includes the potential reoperation of CVP and SWP reservoirs and recalculated flood curves to increase storage and water supplies. This is an activity which	As discussed in Appendix D Section 3.1.2, this potential alternative component was screened out of further consideration because it is outside the scope of this project. Most reservoir flood curves are dictated by the U.S. Army Corps of Engineers (USACE) and any proposed change to them would need to be an action taken by the USACE, not an action consulted on by Reclamation. The intent of the project is to increase water deliveries, not change flood protection, which is a public safety issue. Reclamation is committed to maintaining public health and safety. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Climate change is incorporated into the analysis in the EIS. Please also see Appendix F,

Ltr#	Cmt#	Comment	Response
		Reclamation determined in the screening table was not within the project scope. In the Water Control Manuals for reservoir operations, many of the flood curves (reservoir rule curves) used in determining when and how much capacity CVP and SWP reservoirs have for flood control are based on older hydrologic records that do not account for recent observational data or projected impacts of climate change. These impacts may result in hydrologic changes including changing water demand patterns and streamflow quantities and timing. Additionally, new atmospheric forecasting and sensing technology may also play a key role in amending reservoir Water Control Manuals and recalculating reservoir rule curves to maximize storage capacity. Pilot studies such as the Forecast Informed Reservoir Operations [Footnote 1: https://cw3e.ucsd.edu/firo-preliminary-viability-assessment-for-lake-mendocino/] (FIRO), which assesses the viability of optimizing water management and improving resilience of an U.S. Army Corps of Engineers reservoir, have potential to inform operations of CVP and SWP reservoirs in a manner that increases storage and available water supplies. The recalculate flood curves component should be included in the project alternatives, as including more recent data and the role of new forecasting and sensing technology may increase water storage and be within the project's scope to maximize water deliveries.	Modeling, Attachment 2 for additional information regarding climate change modeling.
17	3	Identification and Consideration of Alternative Components: In Appendix D, Chapter 3, Alternative Development Process (Draft EIS, page 3-2), Table 3.1-1, Component Screening Results, lists potential components of the No Action Alternative and the four project alternatives (proposed alternatives), including a description, notes, screening criteria, and reasons to screen out each component. The following should be reconsidered and included as components of the proposed alternatives within the Final EIS: Storage integration (Draft EIS, Appendix D, page 3-3) – this component allows for management and operation of CVP and SWP reservoirs in a manner that could potentially increase storage and available water supplies. This is an activity which Reclamation determined was not within the project scope because Reclamation regularly considers options to improve integration of storage operations for each facility. Integrated storage operations should be considered both for each facility and for the system as a whole. Water storage on the Delta's main stem rivers and tributaries should be more broadly integrated across the proposed alternatives. One study, the Association of California Water Agencies' Storage Integration Study [Footnote 2: https://www.acwa.com/wp-content/uploads/2017/06/2017-06-05-ACWA-	As discussed in Appendix D, Section 3.1.2, components that Reclamation is implementing through other efforts are not within the scope of this effort. Reasonably foreseeable new storage projects are appropriately considered in Section 5, Cumulative Analysis. Reclamation operates the CVP in an integrated manner and the alternatives analyzed, including the operational modeling used, take into account integrated operations to the extent feasible.

Ltr#	Cmt#	Comment	Response
		Integrated-Storage-Final-Report.pdf], identifies opportunities to integrate existing reservoirs throughout the system with proposed water storage projects to potentially provide increased storage and water supplies. Many of the proposed water storage projects would receive partial funding from the State's Water Storage Investment Program for public benefits to construct such proposed water storage projects. Integrated storage projects should be considered feasible and included in this component across the proposed alternatives.	
17	4	Identification and Consideration of Alternative Components: In Appendix D, Chapter 3, Alternative Development Process (Draft EIS, page 3-2), Table 3.1-1, Component Screening Results, lists potential components of the No Action Alternative and the four project alternatives (proposed alternatives), including a description, notes, screening criteria, and reasons to screen out each component. The following should be reconsidered and included as components of the proposed alternatives within the Final EIS: Alternative water supplies (Draft EIS, Appendix D, page 3-6) – this component incorporates alternative water supplies as a part of the proposed alternatives. Although Reclamation determined that this component does not directly accomplish the purpose and need to increase CVP and SWP water deliveries, developing alternative water supplies leads to additional available water supplies in the system and reduced reliance on Delta water. This would enable increased system wide flexibility to vary deliveries and water supply volumes at different times of a water year to meet other objectives and benefits, thus increasing water supplies and deliveries. For example, a regional alternative water supply developed to meet or lower local water demands could potentially increase cold water storage in upstream Delta basin reservoirs. Delta Plan policy WR P1 Reduce Reliance on the Delta through Improved Regional Water Self-Reliance supports this type of regional water supply development. Although alternative water supplies may not directly accomplish the purpose, they should be included as a component across all proposed alternatives given their potential to add system flexibility and indirectly provide increased water supply and water deliveries.	As discussed in Appendix D Section 3.1.2, this potential alternative component was screened out of further consideration because it does not have the proven ability to meet the project purpose and need to increase CVP and SWP water deliveries. This effort does not preclude regional and local entities from implementing measure to lowering local demand.
17	5	The Delta Stewardship Council supports Reclamation's determination that the following components should be retained as part of the alternatives included in the Draft EIS analysis. Improved Delta Cross Channel operations (Draft EIS, Appendix D, page 3-4) – according to the description, this component modifies Delta Cross Channel	This comment makes a general support statement regarding the Draft EIS. No response is required.

Ltr#	Cmt#	Comment	Response
		operations to be more proactive in anticipation of a water quality exceedance. Delta Plan recommendation WR R12a(4)(e) Promote Options for New and Improved Infrastructure Related to Water Conveyance supports this modification.	
17	6	The Delta Stewardship Council supports Reclamation's determination that the following components should be retained as part of the alternatives included in the Draft EIS analysis. Increased exports during high flows (Draft EIS, Appendix D, page 3-5) – according to the description, this component captures and exports more water during periods of high Delta outflow. Under the "Big Gulp/Little Sip" concept, "big gulp" describes a condition that when there is abundant water flow in the Delta, environmental and regulatory standards should be met first, followed by increased water deliveries. "Little sip" describes reduced flow conditions where water deliveries are decreased when environmental and regulatory standards cannot be met. The "Big Gulp/Little Sip" concept is supported by Delta Plan recommendation WR R12h Operate Delta Water Management Facilities Using Adaptive Management Principles. This component of the proposed alternatives represents the "Big Gulp" part of this concept. The "Little Sip" part must also be implemented during periods of low flows in the system to decrease Delta water diversions and protect the Delta ecosystem. Therefore, the increased exports during high flows component of the proposed alternatives should also include a separate component describing the need for decreased exports during low flows.	During periods of lower Delta outflow, Reclamation currently reduces water deliveries when environmental and regulatory standards cannot be met. Reclamation would continue to meet its regulatory requirements under all project alternatives.
17	7	The Delta Stewardship Council supports Reclamation's determination that the following components should be retained as part of the alternatives included in the Draft EIS analysis. A number of components included in the proposed alternatives (e.g., Enhance Delta inflow and outflow, Flexible OMR management, Focus on water reduction, No Fall X2 action, Protection of winter and spring flows, Remove San Joaquin River inflow and export requirement, Restore Delta natural flow regimes, RPA water temperature objectives, Suisun Marsh Salinity Control Gates operations, and Water transfers) should be included in an adaptive management plan for the coordinated operation of SWP and CVP to promote the coequal goals in the face of an uncertain long term future for the Delta and its watershed, as described in Delta Plan recommendation WR R12g. The adaptive management plan for the coordinated operation of SWP and CVP would be a plan for the SWP and CVP operators and managers would follow if	As described in the EIS, Alternative 1 already includes multiple avenues that Reclamation would use to coordinate with other agencies and stakeholders on the operations of the CVP and SWP, including DWR, NMFS, USFWS, CDFW, public water agencies, and other participants. As stated in Section 3.4.8.4, Reclamation would pursue and implement certain actions through collaborative planning with the goal of continuing to identify and undertake actions that benefit listed species. Collaborative planning would make use of the Collaborative Science and Adaptive Management Program, CVPIA, Interagency Ecological Program, and Delta Plan Interagency Implementation Committee, successors to the forums, or complementary forums (e.g., Voluntary Agreement forums). Each of these programs has established governance, work planning, implementation, reporting, and independent review.

Ltr#	Cmt#	Comment	Response
		the objectives of the project and the components in the preferred alternative are not achieved. The Delta Stewardship Council recommends that Reclamation and the Department of Water Resources (DWR) develop an adaptive management plan incorporating the Delta Plan's nine-step adaptive management framework (http://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1b.pdf) that includes these components of the proposed alternatives.	
17	8	Salmonids: Hydrodynamic Effects on Juvenile Salmonids in the Tidal Delta (Draft EIS, Page 1-10) – The Draft EIS states that the influence of river flows on juvenile salmonids are relatively understood, but the tidal Delta with its the dendritic network of rivers, channels, and sloughs provides a complex effect on juvenile salmonids that is not as easily understood. "As such, the hydrodynamic effects of water project operations that can be easily observed in rivers is much less clear in the tidal Delta." (Draft EIS, page 1-10) The Draft EIS describes the term "reverse flows" as a condition where South Delta exports exceed San Joaquin River inflows, where the impact from such flows and export effects in the Old and Middle River corridor can be substantial. The Draft EIS states, "However, investigations completed more recently report juvenile salmonids are unlikely to perceive or be influenced by tidally-averaged 'net' flows, but instead would potentially be affected by instantaneous changes in channel velocity or flow direction (Anderson et al. 2012, Monismith et al. 2014, SST 2017)." (Draft EIS, page 1-10). The Delta Stewardship Council staff have reviewed the three referenced documents and have determined that the three documents do not make substantial conclusions that support the statement above. The Anderson et al. 2012 reference is a report from a review panel for an acoustic tagging study. The panel found some logistic and methodological difficulties that undermined the reliability of the results from the acoustic tags and also concluded that an attempt to adaptively manage in real-time complicated the study. The panel concluded that an alternate path could be to use selective tidal-stream transport behavioral models that account for both flows and tides. While this approach may be promising, the scope of the review was not to provide a scientific basis for management actions, but rather to review the value of a specific acoustic monitoring effort that occurred in a single Spring season. The panel did recommend new paths of investigation that may in the future produce new scientific understanding about migration	This is a complex issue and we disagree with the comment that these citations (and other rationale provided in the EIS) do not support instantaneous velocity and flow direction (over tidally-averaged flows) as the mechanism by which project operations are most likely to influence juvenile salmonids in the tidal Delta. Below we provide more specific references to each of these sources to support this point. While cited sources may sometimes refer to net flow metrics (like Old and Middle River flow [OMR]) in relation to juvenile salmonid survival or behavior, this usage is typically shorthand for hydrodynamic export effects (e.g. velocity and flow direct changes). This shorthand use of OMR does not indicate support for tidally averaged net flows having a direct, mechanistic influence on the behavior of juvenile salmonids. While there are several independent panel reviews which indicate support for velocity and flow direction as likely drivers for export effects on juvenile salmonid behavior in the tidal Delta, we are aware of no such sources which describe and support a mechanistic basis for tidally averaged flows. Such a mechanistic rationale would need to account for: 1) the fact that rearing salmonids are associated with fixed features (e.g. shoals) and are not pelagic, and 2) tagging studies demonstrate migrating juvenile salmonids move through the Delta quickly and therefore lack exposure to the gradual effects of negative tidally averaged flows. This is important because the behavior of juvenile salmonids is very different from pelagic Delta species (e.g., Delta Smelt) and this needs to be carefully considered. Please see Appendix O for additional information, specifically section O2.10, Bay-Delta.

Ltr#	Cmt#	Comment	Response
		behavior. However, the scope of the review was by intention narrow and the conclusions beyond the single acoustic monitoring effort were insubstantial. Council staff reviewed the Salmonid Scoping Team 2017 study (SST 2017) and did not find evidence that the study concludes that reverse flow/net flow is not a component of species navigation in the Delta. The study did conclude that higher Delta net inflow from the San Joaquin River results in higher juvenile survival through the Delta (p. E-90). Monismith et al. 2014 is not a research project, nor is it peer reviewed. Rather, it is a panel summary of a workshop on flows which the Council hosted in 2014. The authors concluded that in all of the assigned reading and panel presentations, they saw very few, solid, quantitative estimates of effects (p. 2). The panel summary suggested that fish could perceive velocity itself and not just changes in velocity (p. 3) and that net tidal flows in the lower south Delta from Old Middle River are a useful index for measuring entrainment (p. 6-7). These references do not appear to represent strong evidence that supports the Draft EIS statements noted above. The Council recommends that Reclamation incorporate other scientific research that would provide specific support for these statements, or revising the statements to offer supportable conclusions about juvenile salmonids, including their potential to respond to tidally-averaged “net flows”.	
17	9	Modeling: Modeling assumptions supporting the Draft EIS are listed under Appendix F. The Final EIS should clarify or refine the following modeling assumptions based upon near-term or future activities in the Delta. Attachment 2-1 Model Assumptions, 2.1 CalSim II Assumptions for the No Action Alternative Facilities – The Draft EIS states that the model includes flood control weirs (e.g., the Fremont Weir which feeds into the Yolo Bypass) in its calculations. Currently, DWR and Reclamation have finalized an EIR/EIS to fulfill the CEQA/NEPA requirements for the Yolo Bypass Salmonid Habitat Restoration and Fish Passage project. In response to the Reasonable and Prudent Alternative (RPA) action I.6.1 and, in part, RPA action 1.7 of the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), the project objectives are to increase the availability of floodplain fisheries rearing habitat for various species of salmon and steelhead and to reduce migratory delays and loss of fish at Fremont Weir and other structures in the Yolo Bypass by increasing connectivity and reducing stranding and presence of migration barriers. The Yolo Bypass Salmonid Habitat Restoration	The EIS, as is noted in Appendix F Attachment 2-2 CalSim II Model Assumptions Callouts, evaluates the Fremont Weir modifications proposed in the Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR Alternative 1 (preferred alternative).

Ltr#	Cmt#	Comment	Response
		and Fish Passage project proposes to meet these objectives by constructing a notch in Fremont Weir to provide increased flows (up to 6,000 cfs for the preferred alternative of an eastside gated notch) into and through the Yolo Bypass. This project appears to be a priority for DWR and Reclamation to fulfill the RPA requirements. Therefore, [Delta Stewardship Council] we recommend that the modeling supporting the Final EIS include the Yolo Bypass Salmonid Habitat Restoration and Fish Passage project in its assumptions and calculations across all proposed alternatives.	
17	10	Modeling: Modeling assumptions supporting the Draft EIS are listed under Appendix F. The Final EIS should clarify or refine the following modeling assumptions based upon near-term or future activities in the Delta. Attachment 2-1 Model Assumptions, 2.1 CalSim II Assumptions for the No Action Alternative Contra Costa Water District (CCWD) Intakes – The model assumes CCWD's existing pumping rates for their facilities in the Delta to provide water storage for the Los Vaqueros Reservoir in Contra Costa County. It is not clear if those assumed rates account for the proposed expansion of the current reservoir's storage capacity up to 275,000 acre-feet. The expansion project proposes a number of components which include upgrading existing conveyance facilities, constructing new conveyance facilities (including a new high-lift pump station on the Contra Costa Canal with a proposed capacity of 350 cfs), replacing existing pumping plants, and completing Rock Slough Fish Screen Improvements. CCWD is planning, designing, and seeking funding and permitting for this expansion. The project has been awarded funds from the State's Water Storage Investment Program and CCWD is actively working with other water agencies to fund the project. The expansion project is a reasonably foreseeable future project that would be constructed within the time horizon of the Draft EIS; thus we [Delta Stewardship Council] recommend that the modeling supporting the Final EIS include the expansion project in its assumptions and calculations across all proposed alternatives.	The EIS notes in Appendix F, Attachment 2-1 that the No Action Alternative represents CVP and SWP operations to comply with the "current" regulatory environment as of (December 27, 2017) under projected Year 2030 conditions. The No Action Alternative assumptions include existing facilities and ongoing programs that existed as of December 27, 2017, the publication date of the Notice of Intent (NOI). The No Action Alternative assumptions also include facilities and programs that received approvals and permits by December 2017, because those programs were consistent with existing management direction as of the NOI. The proposed expansion of Los Vaqueros Reservoir had not received approvals and permits for its implementation at the time of NOI publication.
17	11	Modeling: Modeling assumptions supporting the Draft EIS are listed under Appendix F. The Final EIS should clarify or refine the following modeling assumptions based upon near-term or future activities in the Delta. Attachment 2-1 Model Assumptions, 2.1 CalSim II Assumptions for the No Action Alternative Continued CALFED Agreements – The Draft EIS states that water under the Lower Yuba River Accord Component 1 is assumed to be transferred to south-	As is detailed in the EIS, Appendix F, the modeling relied on to support effects analysis is conducted on a monthly time step. The modeling includes these transfers which allows for an additional monthly average flow capacity of 500 cfs at the SWP Banks Pumping Plant in the period from July through September. The modeling does not identify constraints on this additional pumping at SWP Banks Pumping Plant in the July through September period

Ltr#	Cmt#	Comment	Response
		of- Delta SWP contractors to help mitigate the impact of the National Marine Fisheries Service's (NMFS) biological opinions and State Water Resources Control Board's (SWWRCB) D-1641 regulations on SWP exports during April and May. It is not clear if those transfers would occur at a daily or monthly rate and if those transfers would occur on an annual or multi-year basis, although the Draft EIS states that short-term or temporary water transfers conveyed through Banks Pumping Plant are not included. Additionally, it is unclear what assurances DWR has made that there is capacity in the SWP conveyance system for transfers after SWP delivery obligations are fulfilled. In past water years, the SWP conveyance system did not have the capacity to transfer water beyond the SWP contract obligations. However, the modeling supporting the proposed alternatives may assume that such capacity would be available. The Final EIS should clarify these water transfer assumptions.	due to SWP conveyance system capacity. Please refer to Appendix F Modeling Attachment 2-2 CalSim II Model Assumptions Callouts.
17	12	Modeling: Modeling assumptions supporting the Draft EIS are listed under Appendix F. The Final EIS should clarify or refine the following modeling assumptions based upon near-term or future activities in the Delta. Attachment 2-1 Model Assumptions, 2.1 CalSim II Assumptions for the No Action Alternative Delta Water Quality – The Draft EIS assumed a modified flow-salinity relationship in the Delta equivalent to a 15-cm (6 inch) sea-level rise condition in 2030. According to the Ocean Protection Council's 2018 Sea-Level Rise Guidance document [Footnote 3: http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf], a projection of 15-cm (6-inch) sea-level rise characterizes a low-risk aversion likelihood, characterized by 66% probability that sea-level rise is between 9-cm (3.5-inches) and 15-cm (6-inches). Using a low-risk aversion likelihood may not represent a conservative enough assumption due to a changing climate that is reflected in rising average temperatures (OPC Guidance, page 3). Since the Delta and its tributaries are a fragile system that is a critical component of water infrastructure, a more conservative approach would be to use a medium- to high-risk aversion likelihood. The Delta Stewardship Council recommends that the modeling supporting the Final EIS consider more conservative approaches, for example incorporate a 0.5% probability which meets or exceeds 24-cm (10- inches) of sea-level rise across all proposed alternatives.	As is noted in the EIS, Appendix F, changes in climate conditions and sea level (15 cm rise [6 inch]) were assumed at Year 2030 and are consistent within all action alternatives. Using the BDCP EIR/S approach, the climate scenario was derived based on sampling of the ensemble of GCM projections rather than one single realization or a handful of individual realizations. The Q5 scenario that represents the central tendency of the climate projections was selected. The refence provided by the commenter identifies probabilistic projections of sea level rise and includes a range of projected sea level rise that it identifies as the "likely range" with a 66% probability of occurrence. The 6 inch rise evaluated in the EIS is consistent with the highest projection in that "likely range." Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
17	13	Upper Sacramento River (Shasta and Sacramento Divisions), Coldwater Pool Management – Under Reclamation's water right with the State Water	Reclamation operates the Shasta Temperature Control Device as directed by Order 90-5, and prepares a Sacramento River Temperature Management Plan

Ltr#	Cmt#	Comment	Response
		Resources Control Board, Order 90-5 requires the operation of Shasta Reservoir, among other Reclamation reservoirs, to control temperatures to protect fishery resources and to monitor and report compliance with those requirements. The Draft EIS states the temperature of released water is controlled by managing the coldwater pool through the use of the Shasta Temperature Control Device. Reclamation would determine the volume of water stored to manage the coldwater pool based on monthly (or more frequently) reservoir temperature profiles. Alternative 1 should include consideration of a weekly reservoir temperature profile period, use of weather forecasts in its estimates, and inform stakeholders more often to be more responsive to dynamic conditions that occur daily and hourly.	for each water year. The most recent plan, the 2019 Sacramento River Temperature Management Plan per Water Rights Order 90-5 (available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/2019/20190515_sacriver_tmp.pdf) was developed and reviewed by NMFS, USFWS, CDFW, WAPA and other agencies that are a part of the Sacramento River Temperature Task Group, and was also reviewed by stakeholders at a public meeting on May 6, 2019. No recommendations or modifications were made to the plan by agencies and stakeholders from whom Reclamation sought input. Reclamation does provide near real-time reporting at the following website: https://www.usbr.gov/mp/cvo/vungvari/sactemprpt.pdf. Modifications to these procedures are not being contemplated at this time, however, it’s possible that changes could be considered at a future date in light of new scientific information.
17	14	Intervention Components, Delta Cross Channel (DCC) – Alternative 1 proposes the continued operation of the DCC gates to reduce juvenile salmonid entrainment risk beyond actions consistent with Delta water quality requirements in D-1641. Although the operation of the DCC gates have provided water managers, operators, and in-Delta users flexibility to support various use objectives, the DCC facility has been used beyond its original design and operation since its construction in 1951. Alternative 1 should include modernizing or replacing the DCC among its proposed actions.	Please see Section 3.4.5.9, Additional Operations Components, regrading Delta Cross Channel Gate improvements included as a component of Alternative 1.
17	15	Old and Middle River Management, Delta Smelt Summer-Fall Habitat – Alternative 1 proposes that Reclamation and DWR would use structured decision-making to implement Delta Smelt habitat actions and incorporate a “Four Year Review” of such actions in 2024 and 2028. The Draft EIS outlines a component of the action for the project operations to maintain a monthly average of 2 parts per thousand isohaline at 80 kilometers (km) from the Golden Gate Bridge in above normal and wet water years in September and October with offramp criteria (Draft EIS, Page 3-37). The study, Implications for future survival of delta smelt from four climate change scenarios for the Sacramento–San Joaquin Delta, California (Brown et al. 2013 [Footnote 4: https://ca.water.usgs.gov/projects/baydelta/publications/Brown%20et%20al%202013%20Delta%20smelt%20and%20climate%20change.pdf]), suggests that the distance from the Golden Gate Bridge should be at a range of 72 km instead of 80 km for increased benefits to Delta Smelt. Alternative 1 should be adjusted to employ the 72km range.	Modifications to the distance from the Golden Gate Bridge from 80 km to 72 km are not being considered at this time. Please refer to Master Response 4, Alternatives Formulation, regarding refinements to alternatives made in response to agency and public comments on the Draft EIS. Under Alternative 1, Reclamation would include additional measures to achieve additional benefits, such as operating the Suisun Marsh salinity control gates for an additional 60 days between June 1 and October 31 in below normal and above normal, years. Please see the Final EIS, Section 3.4.5.8, for more about how Reclamation proposes to meet biological goals and objectives with respect to the 2 ppt isohaline at 80 km from the Golden Gate.

Ltr#	Cmt#	Comment	Response
17	16	Past Long-term Operation Biological Opinion (LOBO) Biennial Science Reviews: There are biennial science reviews of CVP and SWP actions to implement the BiOps developed in 2008 and 2009. The purpose of the review is to inform NMFS and U.S. Fish and Wildlife Service (USFWS) as to the efficacy of prior years' water operations and regulatory actions prescribed by their respective RPAs. In the 2015 LOBO review, the Independent Review Panel (IRP) voiced concerns about the temperature data collection for conditions at Shasta Reservoir. They pointed to the adequacy of data gathering methods and a lack of accuracy, redundancy, and resolution in the instrumentation used for data collection. The IRP made several recommendations for improvements, but it is unclear from the Draft EIS if any of the recommendations have been incorporated, or if the concerns of the IRP were addressed in a different manner. The Final EIS should address this concern from the 2015 LOBO review. The Delta Stewardship Council is encouraged to see Reclamation's commitment to the continued use of independent panel reviews as a tool to ensure that management decisions rely on the best, current scientific understanding by including IRP in the Governance section of the Preferred Alternative. According to the Council's standards for an independent panel, though complete consensus is not always reached, a joint report from all panel members is a key component. For more information, see Appendix H in the Delta Science Plan http://deltacouncil.ca.gov/pdf/2019-delta-science-plan.pdf. The Council looks forward to supporting the IRP effort and working with Reclamation and the other agencies involved as needs arise.	Reclamation used the best-available science throughout the EIS. A variety of data were obtained for the environmental review process. Please refer to Appendix O, Aquatic Resources for information on the specific data and methods used in the evaluation of impacts to aquatic resources. Section O.3.1.3 discusses the temperature model used in the EIS analysis. Please refer to Section 3.4.1.4.2, Commitment to Cold Water Management Tiers and Section 3.4.8.6 regarding the use of Independent Panels to review certain components of Alternative 1.

Ltr#	Cmt#	Comment	Response
18	1	The SWC understand that as part of the Endangered Species Act consultation, the federal fish and wildlife agencies have been reviewing a proposed operation that is described in the DEIS as Alternative 1. However, since Reclamation has not made a final decision as to which alternative best describes its proposed operation, and because this DEIS could be used as a reference document in future proceedings unrelated to the current process, we are concerned about the analysis of all alternatives, particularly Alternative 4. The SWC are concerned about Alternative 4 because it uses language that mirrors the State Water Resources Control Board's ("State Water Board")	Modeling assumptions for Alternative 4 are provided in Appendix F, Attachments 2-1 and 2-2.

Ltr#	Cmt#	Comment	Response
		percent of the unimpaired hydrograph approach; however, the modeling does not represent that approach. The modeling makes unfounded assumptions about how such an approach would be implemented, which results in an unrealistic estimation of effects. The description of Alternative 4 is incomplete because it does not clearly explain the many important differences between this alternative as it is modeled and the State Water Board's proposed unimpaired flow approach. These differences are only apparent through a technical review of the modeling. As a result, decision-makers and the public have not been informed of the many assumptions built into this alternative that differentiate it from the State Water Board's approach.	
18	2	The SWC [State Water Contractors] are concerned about 1) the lack of modeling of important aspects of alternatives; 2) the failure to fully disclose the uncertainties in the application of analytical methods, thereby misrepresenting the likely effects of some alternatives; 3.) the failure to rely on up-to-date literature representing best available science; and 4) the overall lack of synthesis and detailed reporting of results, which limits the informational value of the document.	Detailed responses to the detailed comments associated with the topics identified here are provided in these responses to comments.
18	3	Alternative 4 is legally and technically flawed and should be revised and/or rejected. The [State Water Contractors] SWC are concerned that Alternative 4 does not satisfy project purposes and therefore should have been rejected from further analysis. We are further concerned about the lack of detail in the description of Alternative 4 and the modeling of the alternative that reflects unrealistic assumptions used for the modeling, including the assumption that the State Water Project ("SWP") would provide more outflow than the Central Valley Project ("CVP").	Model assumptions are provided in Appendix F Attachments 2-1 and 2-2.
18	4	Alternative 4 does not satisfy the purpose of the project and should have been rejected from further consideration. Alternative 4 does not meet the purpose of the project and should therefore be rejected because it would not maximize water deliveries, providing less water than the No Action Alternative. See City of Carmel-by-the-Sea v. U.S. Dept. of Trans., 123 F.3d 1142, 1155 (9th Cir. 1997) (under NEPA, the alternatives to be analyzed derive from the project purpose and need); Audubon Naturalist Soc'y of the Cent. Atl. States, Inc. v. U.S. Dept. of Trans., 524 F. Supp. 2d 642, 670 n.26 (D. Md. 2007) ("Alternatives addressing different purposes and goals [from those defined by the agency] are inherently unreasonable or infeasible."). Alternative 4 is unreasonable and infeasible.	Each alternative addresses goals provided in Section 2.2. Please see Master Response 4, Alternatives Formulation, regarding the consideration of Alternative 4. Please see Master Response 1, Responses to General Comments, regarding the purpose and need.

Ltr#	Cmt#	Comment	Response
18	5	Alternative 4 assumes that non-project water users would be responsible for meeting half of the outflow requirements. The modeling appears to have adjusted the unimpaired flow requirements by assuming only half of the Alternative's outflow requirements would be met by the CVP/SWP. In years that did not trigger off-ramps due to dry conditions, the modeling does not apply the outflow requirement to the CVP/SWP in 59% of the months, and yet the outflow requirement is met without explanation. It appears that non-project water users are providing outflow even though Reclamation does not have the authority to allocate responsibility to non-project water users. Thus, Alternative 4 relies on an assumption regarding outflow requirements that Reclamation is incapable of satisfying. The DEIS fails to disclose this assumed allocation of responsibility, so decision-makers and the public would not fully understand the water supply impacts of this alternative. While non-project water users' supplies are estimated and reported for Alternative 4, there is no statement in the document that explains that the modeled differences are a result of non-project water users providing outflow. In the event that the additional outflow requirements are met in some other manner, neither the DEIS nor the underlying modeling explains how this is done. Reclamation does not have the authority to implement this alternative as modeled. This alternative needs to be more.	Alternative 4 does not assume that non-project water users would be responsible for meeting any of the outflow requirements.
18	6	Alternative 4 improperly assumes that the SWP would be responsible for more outflow than the CVP. In determining when the unimpaired flow requirements would be off-ramped in the Alternative 4 modeling, Reclamation defined hydrology indices for the Sacramento, Feather, and American Rivers (SAC Index, FTR index and AMR Index). The definitions of these indices are not consistent. This inconsistency results in off-ramping the unimpaired flow requirements on CVP tributaries more frequently than SWP tributaries. The Alternative 4 modeling results seem to indicate that unimpaired flows requirements would be off-ramped in 73% of the time on the American River, 48% of the time on the Sacramento River, and only 34% of the time on the Feather. We [State Water Contractors] were unable to determine which water users were responsible for meeting the outflow requirement when one or two, but not all, rivers were off-ramped. We assume it is a mix of the remaining rivers (thereby shifting the burden of meeting the outflow requirement to the other rivers) and	Alternative 4 does not assume that non-project water users would be responsible for meeting any of the outflow requirements. Off-ramps are subject to the water indices for each basin. These indices are based on hydrology, not project facilities or operations. Off-ramps occur most frequently on the American River as it has highest proportion of non-project water users. Therefore, CVP is less likely to meet 55% UIF criteria in this basin.

Ltr#	Cmt#	Comment	Response
		non-project water users. Reclamation does not have the authority to implement this alternative because it lacks authority to regulate non-project water user contributions to outflow. The SWC object to the assumption that the SWP would be allocated more responsibility for outflow than the CVP, and we request that the effects of this Alternative be updated and fully disclosed accordingly.	
18	7	Alternative 4 violates the COA. In meeting the 55% unimpaired flow requirement, Alternative 4 does not appear to adhere to the Coordinated Operating Agreement's ("COA") sharing responsibilities. This is one more instance where the modeling reveals that Alternative 4 exceeds Reclamation's discretion. For example, based on the modeling presented in the DEIS, additional releases from the upstream reservoirs to meet unimpaired flow requirements were approximately 1 million acre-feet ("MAF") annually (by water-year) for the CVP and 1.7 MAF annually for the SWP. This discrepancy is even greater when the difference is calculated using only years when the modeling implemented the flow requirements, in which case the results are that the CVP contribution is 1.2 MAF annually and the SWP contribution is 2.2 MAF annually. The SWC request that Alternative 4 be modified to be consistent with the COA and the effects analysis be updated and all impacts fully disclosed.	Commenter is concerned that Alternative 4 violates COA. COA is a model assumption for Alternative 4.
18	8	Alternative 4 modeling is flawed. There appear to be important mistakes in the modeling of Alternative 4 that negatively affect the results, as follows: In at least one instance, the impairment due to total diversions by the senior water right holders seems to be out of the normal range of the model (February 1940). Despite the alternative being based on the objective of providing 55% of unimpaired outflow, the model does not include an off-ramp once 55% of unimpaired flow is met. There are 137 months in which Alternative 4 shows releases from upstream reservoirs to meet the unimpaired flow requirements even when Delta outflow is greater than the unimpaired outflow objective. The DEIS states that Alternative 4 includes export constraints from April through May depending on San Joaquin River flows, however this requirement was not included in the modeling. While Alternative 4 modeling appears to assume an outflow contribution from non-project water users in the Sacramento River Basin, it does not assume a	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Unimpaired flow (UIF) requirements occur on tributaries, not Delta Outflow. Delta Outflow increases as a result of UIF requirements on tributaries. Many actions under this scenario require actions by others; Reclamation developed and modeled this alternative in a manner consistent with its water rights and authority to operate. Alternatives 2 and 3 assume Shasta temperature operations consistent with NAA. These assumptions are described in Appendix F Attachments 2-1 and 2-2.

Ltr#	Cmt#	Comment	Response
		contribution from any other Delta tributary. The DEIS provides no rationale for this difference. • There is no physical or regulatory limitation in either Alternative 2 or 3 that would justify a different assumed Shasta temperature operation than that applied in the modeling of Alternatives 4 and 1. Either the modeling assumptions should be consistent or the DEIS should explain the rationale for the difference in modeling assumptions between these alternatives. The SWC [State Water Contractors] request that the modeling of Alternative 4 be updated to avoid these errors so the effects of the alternative would be fully disclosed.	
18	9	The description of Alternative 4 is flawed. The description of Alternative 4 is incomplete and flawed. First, it fails to disclose the many significant modeling assumptions that define this alternative, including those identified above. The only way for the public and decision-makers to understand this alternative is to have a modeler with expertise in CALSIM II and DSM2 models spend hours attempting to decipher the results to extrapolate the modeling assumptions. It is unreasonable to expect that decisionmakers and the public have the ability to undertake this level of independent analysis. Moreover, even though the SWC [State Water Contractors] have in-house expertise in these models, it remains unclear how the models were used to produce the results for Alternative 4. The description of Alternative 4 needs to be modified to more clearly and accurately describe all the assumptions regarding how it would be operationalized.	Model assumptions are provided in Appendix F Attachments 2-1 and 2-2. These assumptions are at the same level of detail as NAA, ALT 1, ALT 2, and ALT 3. Consistent with the other alternatives, Alternative 4 is defined sufficiently for purposes of the NEPA analysis. The analysis is both quantitative and qualitative, and accordingly not all details are incorporated into the models.
18	10	Alternative 4 includes increased water conservation above current legal requirements. (See Alternative 4 description and mitigation measure AG-1.) The DEIS does not disclose any evidence that this level of additional conservation is feasible. This component of the alternative was not modeled, so it is not possible to discern the amount of water the DEIS assumes could be conserved. Our member agencies [State Water Contractors] have spent millions of dollars on water conservation over the last 20 years, with impressive results, and that experience suggests it will be difficult to achieve additional conservation over existing legal requirements. At a minimum, further analysis in the DEIS is needed to explain how this could be accomplished. We assume that the DEIS is referring to water conservation by the CVP/SWP, but that is not clear from the project description, and many of the most promising conservation opportunities are in areas not served by the water projects. The	Section 3.7.9.1 and Appendix D Section 4.6.9 have been updated with additional information on potential water efficiency measures for CVP agricultural contractors. This alternative component is described at a program-level. As discussed in the EIS, subsequent NEPA analyses may be performed as needed for programmatic actions to analyze site-specific environmental impacts.

Ltr#	Cmt#	Comment	Response
		DEIS needs to describe how this additional conservation could be feasibly accomplished and analyze the effects.	
18	11	Alternative 4 fails to explain the difference between unimpaired flows and rim reservoir in-flows assumed in the model for each of the tributaries. The description of the alternative also improperly equates unimpaired flows with natural flows. Where the land-water interface has been profoundly altered by levees, concrete rip-rap, channelization, island reclamation, dredging, and land development, unimpaired flows are not "natural" and are not representative of predevelopment conditions. This correction is essential to an accurate understanding of project impacts.	The commenter is concerned that text in the EIS equates unimpaired flow to natural flow. However, text on page 3-48 of the EIS describes that matching a pattern of natural flow is purpose for an unimpaired flow requirement. Attempting to match a pattern of natural flow through an unimpaired flow requirement is possible. However, as the commenter noted, meeting unimpaired flow is not meeting natural flow.
18	12	The National Environmental Policy Act ("NEPA") requires that Reclamation discuss the significance of alternative induced changes as compared to baseline. (40 C.F.R §1502.16.) In some cases, the DEIS identifies significance thresholds (e.g., 5% difference in modeling results), but in other cases there is no significance threshold identified. In either case, the synthesis of results is vague, using terms like "more or less of a change in the environment," which is not informative as not every change in the environment is significant. The conclusion statements are also vague, stating that there is the potential for change in the environment as compared to the baseline No Action Alternative without also explaining the significance of the difference (See e.g., Water Quality, G-70, Aquatic species, p. O-162.)	Please see Master Response 5, Adequacy of Analysis and Mitigation regarding significance thresholds and impact conclusion statements.
18	13	While there is a list of mitigation measures, the DEIS does not provide sufficient information to determine when the application of any of the mitigation measures would be appropriate. The SWC request that the DEIS be revised so that the significance of these impacts can be determined and so that the necessity and/or propriety of mitigation measures can more easily be understood by the public.	Please see Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of mitigation measures.
18	14	The description of Alternative 1 should be updated to match the proposed operation. Alternative 1 does not properly describe the Summer-Fall Habitat Action as proposed by Reclamation, which includes a wet and above-normal water year September-October 80 km X2 backstop operation as well as Suisun Marsh Salinity Control Gate operations in below normal, above normal and wet water years in summer and fall. Alternative 1 is drafted as though no Summer-Fall Habitat Action is being proposed, or as if there would be infrequent implementation, which is incorrect.	Please refer to Master Response 4, Alternatives Formulation, regarding refinements to alternatives made in response to agency and public comments on the Draft EIS. Please also see the Final EIS, Section 3.4.5.8, for updates to the Delta Smelt Summer-Fall Habitat Action.

Ltr#	Cmt#	Comment	Response
18	15	Alternative 1 is not fully represented in the modeling. The Summer-Fall Habitat Action is not included in the modeling. This is problematic as conclusions are reached in a number of resource areas based on modeling results that suggest a large change in fall flow and salinity, inconsistent with what is currently proposed by Reclamation. While the DEIS does acknowledge that the modeled changes may not occur, the suggestion is that the default is no habitat action, which is incorrect. The SWC [State Water Contractors] request additional modeling be conducted that includes the proposed Summer-Fall Habitat Action.	Please refer to Master Response 4, Alternatives Formulation, regarding refinements to alternatives made in response to agency and public comments on the Draft EIS. Please also see Appendix F, Attachment 1, for additional information regarding modeling for the revised Alternative 1.
18	16	The DEIS includes hundreds of pages of discussion of Delta fish species that do not include the most up-to-date summary of the current scientific understanding of the various species. The DEIS inappropriately characterizes many of the more recent studies as a scientific disagreement as opposed to advancements in our scientific understanding. Moreover, some recent studies that were submitted to Reclamation were not considered or used at all.	Reclamation has strived to use the best available science throughout the EIS, consistent with the requirements of NEPA, and used its best efforts to find out and disclose what it reasonably can. Please refer to Master Response 5, Adequacy of Analysis and to Appendix O, Section O.3.1, Methods and Tools, for descriptions of modeling conducted in evaluating effects of the alternatives. See Section O.3.3, Alternative 1 – Project-level Effects, and Section O.3.4, Alternative 1 – Program-level Effects, for discussion of anticipated effects to Delta species.
18	17	Delta Smelt are not a species with a known correlative relationship between winter-spring X2 and species abundance. The DEIS states at p. O-84, “As discussed earlier for Delta Smelt, a substantial portion of the abundance patterns has been associated with variation of outflow in the estuary (Jassby et al. 1995; Kimmerer et al. 2001; Loboschefsky et al. 2012), although this is disputed by some stakeholders ….” There is no dispute with stakeholders because Jassby et al. 1995 [Footnote 1: Jassby, A.D., Kimmerer, A.J., Monismith, S.G., Armor, C., Cloern, J.E., Powell, T.A., Schubel, J.R., and Venlinski, T.J. 1995. Isohaline Position as a Habitat Indicator for Estuarine Populations, Ecological Applications, 5(1), pp. 272-289.] and Kimmerer et al. 2001 [Footnote 2: The correct cite is Kimmerer 2002.] did not reach the conclusion cited above from the DEIS. Jassby et al. and Kimmerer et al. stated the opposite, they found no relationship between variations in winter-spring outflow (or X2) and Delta Smelt abundance. Jassby et al. stated at p. 279 (emphasis added), “Except for Eurytemora and delta smelt, each biological variable exhibits a statistically verifiable relationship with X2.” Kimmerer et al. [Footnote 3: Kimmerer, W.J. 2002. Effects of freshwater flow on abundance of estuarine organisms: physical effects or trophic linkages. Mar. Ecol. Prog. Ser.,	The comment focuses on Delta Smelt, whereas the text being referenced is actually referring to Striped Bass. The commenter generally is correct in noting that there is little evidence for statistically significant relationships between Delta Smelt and X2. As described in Appendix O, Section O.2.10., Bay-Delta, X2 has been correlated with the amount of suitable habitat for Delta smelt in the fall (Feyrer et al. 2007, 2010; USFWS 2008a), but X2 may be indexing other environmental variables or processes than extent of habitat (Baxter et al. 2010), and other factors may also be influencing survival (Manly et al. 2015).

Ltr#	Cmt#	Comment	Response
		243: pp.39-55.] at p. 46 stated (emphasis added), “All of the fish and shrimp, except delta smelt, had negative relationships with X2, indicating higher abundance at high outflow ….” The DEIS statement is apparently based on Loboschefsky et al. 2012, which misstated the conclusions from the cited studies. It should be further noted that the draft FWS LTO biological opinion for Delta Smelt explained that no demonstrable positive biological response to freshwater flows into or out of the Delta has been found to exist. (FWS Draft LTO BO, p. 68.) Specifically, the FWS stated at p. 68 (emphasis added) that: The life-history of delta smelt with its affinity for fresh and low-salinity waters seems consistent with that of a fish one could expect to respond similarly to variation in Delta outflow or X2. Researchers have searched for some form of analogous relationship for the delta smelt for several decades, but no persistent relationship has been found (Stevens and Miller 1983; Moyle et al. 1992; Jassby et al. 1995; Kimmerer 2002b; Bennett 2005; Mac Nally et al. 2010; Thomson et al. 2010; Miller et al. 2012). The FWS and stakeholders are not having a dispute. There is no relationship. Incorrect characterizations similar to those in the DEIS at p. O-84 appear throughout the DEIS and should be corrected.	
18	18	There is no strong evidence that a change in fall X2 would result in a change in Delta Smelt abundance, survival and growth. DEIS states at p. O-293, “the size and location of the low salinity zone is hypothesized to affect subadult Delta Smelt abundance, survival, and growth, although evidence is mixed and additional investigations are thought to be needed to provide further support.” This statement seems to suggest that the conceptual model is sound, although further studies are warranted. The DEIS should have instead acknowledged the possibility that the conceptual model is not sound because there is little evidence to support it. The conceptual model that the DEIS references was first articulated in the 2008 United States Fish and Wildlife Service biological opinion on the coordinated operation of the CVP and SWP (“BO”), which relied on Feyrer et al. 2007. The Feyrer et al. model is not biologically appropriate, being a linear model that assumes new smelt could come from zero adults. The application of the Feyrer et al. model in the 2008 BO was criticized by the National Research Council in 2010, [Footnote 4: National Research Council, Committee on Sustainable water and Environmental Management in the California Bay-Delta. 2010. A Scientific Assessment of Alternatives for Reducing Water Management Effects	As described in the EIS at Section 5.9.1.7.6, Delta Smelt, and in Appendix O at Section O.2.10.1.7, Delta Smelt, and Section O.3.3.8.1, Delta Smelt, it is acknowledged that there is uncertainty in the effects of fall X2. Alternative 1 includes structured decision making and adaptive management to address uncertainty in the Summer-Fall Delta Smelt Habitat action, which is based on recent science suggesting factors such as the importance of Suisun Marsh because of relatively high productivity (Hammock, B. G., J. A. Hobbs, S. B. Slater, S. Acuña, and S. J. Teh. 2015. Contaminant and food limitation stress in an endangered estuarine fish. Science of the Total Environment 532:316-326).

Ltr#	Cmt#	Comment	Response
		on Threatened and Endangered Fishes in California's Bay-Delta, National Academies Press.] amongst others. However, even if the model were appropriate for making predictions, the model does not show a significant difference in species abundance when comparing X2 at 74km to X2 at 80km, the location being proposed in Alternative 1. The results of such a comparison show an equal chance of an increase or a decrease in species abundance. (2017 Fall Habitat Environmental Assessment, Appendix A, pp. 31-39. [Footnote 5: The missing Figure 17 can be obtained from Dr. Marin Greenwood at ICF.]) This suggests that higher outflow (lower X2) is not likely to increase species abundance.	
18	19	Overall, the DEIS' discussion of the predicted effects of changing the location of X2 in the fall is out-dated and fails to discuss recent government reports and studies. The existing discussion does not appear to include findings from scientific studies conducted after 2011. For example, the 2019 draft FLOAT-MAST, which synthesized monitoring results from previous wet water-years (2006, 2011, and 2017), indicated that temperature was the dominant factor, rather than flow, affecting fall abundance of Delta Smelt. For example, the draft FLOAT-MAST states: "It is likely that warm summer temperature was the primary reason for the low Delta Smelt survival into the fall of 2017." (FLOAT-MAST at p. 107.) "Dynamic biotic habitat conditions were somewhat better in 2017; however, the lack of response of the Delta Smelt population suggests that any benefits of changes in the habitat were minimal." (Id. at p. 104.) "Within the group of wet years (2006, 2011, 2017), Delta Smelt physical habitat conditions were fairly comparable for salinity, turbidity and the Delta Smelt habitat index. The major difference was in summer-fall water temperatures, with only 2011 having relatively cool temperatures in summer and fall." (Id. at p. 101.) "Similar to phytoplankton, zooplankton abundance, specifically herbivorous calanoid copepods, was higher in 2017 compared to other years but there was no clear pattern related to water year type." (Id. at p. 105.) The DEIS should be revised based on more recent government studies and reports, representing best available science. The DEIS should also acknowledge that the Feyrer et al. 2007 model results are highly uncertain, showing no	It is anticipated that the Summer-Fall Habitat Action will be adaptively managed over time to reflect scientific knowledge such as the results of the FLOAT-MAST studies, as reflected for example in Alternative 1 considering an environmental goal of achieving low salinity habitat in Suisun Marsh when water temperature is suitable (see EIS Section 3.4.5.8, Delta Smelt Summer-Fall Habitat). Please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science, and to Master Response 7, Aquatic Resources, regarding Delta smelt Summer-Fall habitat modeling and operations.

Ltr#	Cmt#	Comment	Response
		reliable prediction of changed species abundance if X2 were located at 80km as compared to 74km.	
18	20	Delta Smelt utilize a wider range of habitats than is suggested by the DEIS. The DEIS states in a number of locations that "physical drivers such as the area of low salinity zone habitat that Delta Smelt tend to occupy are well correlated with Delta outflow or X2 …." (DEIS, p. 1-8.) However, this statement fails to acknowledge that there are freshwater resident Delta Smelt that never reside in the low salinity zone, Bush 2017, and that even the migratory Delta Smelt are not found exclusively in the low salinity zone. The DEIS consistently fails to acknowledge that Delta Smelt inhabit a wide range of salinities on the mainstem of the Sacramento River, and studies have not found evidence of salinity alone acting as a stressor on smelt populations. (See e.g., Bush 2017, Komoroske et al. 2016 [Footnote 6: Komoroske, L.M. Jeffries, K.M., Connon, R.E., Dexter, J., Hasenbein, M., Verhille, C., and Fangue, N.A. 2016. Sublethal salinity stress contributes to habitat limitation in endangered estuarine fish. Evolutionary Applications, doi:10.1111/eva.12385. [Paper found no support for hypothesis stated in title of paper.], and Hammock et al. 2017. [Footnote 7: Hammock, B.G., Slater, S.B., Baxter, R.D., Fangue, N.A., Cocherell, D., Hennessy, A., Kurobe, T., Tai, C. Y., T, S.J. 2017. Foraging and metabolic consequences of semi-anadromy for an endangered estuarine fish. PLOS ONE, http://doi.org/10.137/journal.pone.0173497.]) The lack of a salinity stress biomarkers in laboratory studies suggests that the issue is much more complex but the DEIS does not acknowledge that complexity. The quoted statement also fails to acknowledge that low salinity is only one aspect of Delta Smelt habitat and the other components of habitat do not necessarily change with X2, including temperature, turbidity, food, and bathymetry. For example, the draft FLOAT-MAST found that water temperatures can be elevated in wet water years and cool in drier hydrology, suggesting no direct link between summer-fall flow and water temperature: "Wet years could be warm (2006 and 2017) or cool (2011) compared to other years." (Id. at p. 26) "In many cases, high temperatures occur during drier years and are considered a common companion to drought; however, during the post-POD era, 2 of 3 wet years have also been warm during the summer." (Id. at p. 102) The DEIS should be revised to acknowledge that flow and temperature are not directly related and that multiple factors shape the quality and existence of Delta Smelt habitat. SWC [State Water Contractors] also request that	With respect to acknowledgement of Delta Smelt residing in freshwater habitat, that is acknowledged in the EIS at Section 4.8.2.7, Delta Smelt with reference to Bush (2017. It is acknowledged that there is some complexity and uncertainty in physiological responses to salinity, as other studies have found cellular stress to be lower at low salinity compared to higher salinity (Hasenbein, M., L. M. Komoroske, R. E. Connon, J. Geist, and N. A. Fangue. 2013. Turbidity and Salinity Affect Feeding Performance and Physiological Stress in the Endangered Delta Smelt. Integrative and Comparative Biology 53(4):620-634). With respect to the FLOAT-MAST report and temperature link cited by the commenter, the DEIS acknowledges temperature in having environmental goal of achieving low salinity habitat in Suisun Marsh when water temperature is suitable (See EIS at Section 3.4.5.8, Delta Smelt Summer-Fall Habitat). With respect to acknowledgement that flow and temperature are not directly related, the EIS, in Appendix O at Section O.3.3.8.1, Delta Smelt, makes such acknowledgement: "seasonal operations would not be expected to affect temperature to the point that predation risk is influenced by Alternative 1 (which is true for all Delta Smelt life stages)". With respect to acknowledgement that multiple factors shape the quality and existence of Delta Smelt habitat, such acknowledgement is provided in the EIS, e.g., at Section 3.4.5.8, Delta Smelt Summer-Fall Habitat, which in addition to salinity also references temperature, food availability, turbidity, and littoral or open water physical habitats.

Ltr#	Cmt#	Comment	Response
		Reclamation revise the DEIS to reflect that there is scientific uncertainty regarding whether salinity alone restricts the distribution of Delta Smelt. And finally, SWC request that the DEIS be revised to reflect recent, published analyses that do not support the assumption that X2 is an appropriate surrogate for Delta Smelt habitat. [Footnote 8: Murphy, D.D., Weiland P.S. 2019. The low-salinity zone in the San Francisco Estuary as a proxy for Delta Smelt habitat: A case study in the misuse of surrogates in conservation planning. Ecological Indicators 105:29-35.].	
18	21	The DEIS fails to fully acknowledge uncertainty in its analysis of potential operational effects on Delta Smelt food supplies and predators. The DEIS quotes extensively from the BA (See e.g., Appendix O-289 to O-290.), referencing analyses related to potential project related effects to Delta Smelt food supplies and predation rates, but the DEIS fails to also cite the uncertainty related to those analyses. The BA contains a series of correlative analyses based on several conceptual models and published papers. However, the application of the conceptual models and papers employed in the BA has not been peer reviewed and published. There is a high degree of uncertainty associated with those analyses and that uncertainty should be fully disclosed and acknowledged in the DEIS so that the DEIS does not provide the misleading impression that such statements are fact.	Contrary to the commenter's suggestion that the EIS does not acknowledge uncertainty in the various cited analyses, the EIS does in fact make several references to uncertainty, for example, with respect to predation and silversides (in Appendix O, Section O.3.3.8.1, Delta Smelt: "The extent to which the opposing effects of differences in exports and inflow could affect Silverside abundance under Alternative 1 is uncertain, particularly given that the relationships are correlations and do not necessarily imply causality and require further investigation") and Eurytemora affinis food supplies abundance (Appendix O, Section O.3.3.8.1, Delta Smelt : "there is uncertainty in the predictive relationship between X2 and E. affinis abundance"). With respect to Pseudodiaptomus forbesi food supplies, the EIS (in Appendix O at Section O.3.3.8.1, Delta Smelt) references the analysis in the BA, which notes on p.5-385 the uncertainty in the conclusion for potential negative effects on transport of P. forbesi to the low salinity zone.
18	22	The DEIS should rely on more recent scientific literature regarding Longfin Smelt The DEIS labels more recent studies as being part of a controversy (Section 1.4.1) and then applies an older scientific paradigm in its analysis of potential impacts to Longfin Smelt. This section does not explain why or how the new studies were considered and disregarded for purposes of the DEIS or why the controversy is significant. In light of the fact that contrary information cannot simply be disregarded without an explanation or some degree of consideration, a clearer explanation is needed of the long-standing scientific controversies and why Reclamation has chosen to rely on the older studies rather than the newer ones in its analysis of impacts to Longfin Smelt. We [State Water Contractors] do not believe older paradigms are less controversial than the newer ones. As new science emerges, it should be embraced and factored into decision making to ensure that the best opportunities for addressing species needs are realized. In fact, more recent analyses that have been vetted through the peer review and	The commenter's suggestion that an older paradigm is applied to the analysis of Longfin Smelt is not accurate, because correlations between Longfin Smelt and Delta outflow or X2 and indices of abundance remain evident and are still relevant for consideration of effects. The EIS acknowledges uncertainty in the relationships (e.g., at Section 5.9.1.7.7, Longfin Smelt, and at Appendix O, Section O.3.3.8.2, Longfin Smelt). Please see also Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science, and see Master Response 7, Aquatic Resources, regarding Delta outflow and potential changes to longfin smelt abundance.

Ltr#	Cmt#	Comment	Response
		publication process may be presumed more reliable than older analyses all things being equal. This is the case because the authors of those newer analyses have the benefit of access to the prior analyses and contemporary data and analytical approaches.	
18	23	The DEIS should explain the importance of understanding the biological mechanisms underlying the observed winter-spring X2: fall midwater trawl (“FMWT”) abundance correlation when evaluating changes in average monthly outflow. Understanding the mechanisms behind the flow relationships was advised by the Outflow Independent Science Panel 2014 [Reed, D., J. Hollibaugh, J. Korman, P. Montagna, E. Peebles, K. Rose, and P. Smith. 2014. Delta Science Program independent science review; workshop on Delta outflows and related stressors. Technical report submitted to the Delta Science Program, Sacramento, CA.]. It is well-established that Longfin Smelt are found extensively outside of the standard monitoring program in the Delta (Grimaldo et al. 2017 [Footnote 10: Grimaldo, L., F. Feyrer, J. Burns, and D. Maniscalco. 2017. Sampling uncharted waters: Examining rearing habitat of larval Longfin Smelt (Spirinchus thaleichthys) in the Upper San Francisco Estuary. Estuaries and Coasts, 40:1771-1784.]; Parker et al. 2017 [Footnote 11: Parker, C, Hobbs, J, Bisson, M, Barros, A. 2017. Do Longfin smelt spawn in San Francisco Bay Tributaries? IEP Newsletter. IEP. Sacramento, CA. 30(1):29-36.]) which means that a change in apparent abundance in the surveys needs to be interpreted with caution. For example, the apparent change may actually be a change in species distribution, with species moving in and out of the surveyed areas.	The EIS acknowledges the potential role of previously unsampled areas as a factor in abundance index-X2 relationships (see Section 1.4.1.1.2 Delta outflow as a driver of Longfin Smelt population dynamics). Please also see Master Response 7, Aquatic Resources, regarding Delta outflow and potential changes to longfin smelt abundance.
18	24	As the genetic signature of Bay-Delta Longfin Smelt has been identified as far north as the Columbia River (communication with Mandi Finger, UC Davis), it should be acknowledged that some Longfin Smelt may have left the Bay-Delta system permanently to support other populations of Longfin Smelt and have not experienced mortality.	Although unclear, the comment is presumably alluding to potential mortality related to water operations in the Bay-Delta, and that Longfin Smelt leaving the Bay-Delta may not be subject to such mortality. As noted in the EIS (See Appendix O, Section O.2.1, Fish and Aquatic Species Evaluated, specifically in Table O.2.1 Focal Fish Species by Region of Occurrence), the analysis is considering the Bay-Delta Distinct Population Segment (DPS) of Longfin Smelt. If indeed some Longfin Smelt have permanently left the Bay-Delta to support other population as the commenter suggests, then those fish presumably would no longer be supporting the DPS, so it is unclear what type of acknowledgement is being sought. Please refer to Master Response 1, Responses to General Comments, for responses to comments which do not raise specific significant environmental issues.
18	25	It should be acknowledged that since Longfin Smelt abundance increases throughout the Delta and San Francisco Bay during wet years (Grimaldo et al.	Acknowledgement of the role of wet hydrology suggested by the commenter is provided in the EIS, see Appendix O, Section O.3.3.8.2, Longfin Smelt. Please

Ltr#	Cmt#	Comment	Response
		2017; Parker et al. 2017), the biological mechanism underlying the correlation is likely related to wet hydrology, and reservoir releases may not be able to recreate those conditions. In other words, some of the existing and best available science indicates that the effect of reservoir releases on Longfin Smelt is uncertain.	see also Master Response 7, Aquatic Resources regarding Delta outflow and potential changes to longfin smelt abundance. Refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science.
18	26	Even if the location of X2 in the Delta were causal, the DEIS fails to address whether the outflow from reservoir releases could potentially be used to build the Longfin Smelt population over time. (Nobriga and Rosenfield 2016; Department of Water Resources application for a minor amendment to its California Incidental Take Statement ("ITS"), December 2018 ["Therefore, increasing outflow as a mechanism to increase LFS population is unlikely to produce detectable increases in the LFS abundance."], Exhibit 2.) The SWC request that the DEIS be updated to reply on best available science, which includes more recent government reports and published literature.	Please see Master Response 7, Aquatic Resources, regarding Delta outflow and regarding potential changes to longfin smelt abundance. Also refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science.
18	27	The DEIS should be revised to reflect more updated information and analysis in multiple resource categories across all alternatives. The SWC [State Water Contractors] have specific Comment s in multiple resource categories. Those Comment s are provided in the attached Exhibit 1 [Attachment 1]. The SWC request that the above indicated flaws be addressed; modeling assumptions clarified and disclosed; and new modeling be completed to more accurately reflect Reclamation's descriptions of Alternatives 1 and 4. The SWC further ask that Reclamation apply the best available science that fully considers the more recent published literature. The SWC expect that a complete response to our Comment s would require new modeling and analysis, and we would appreciate having an opportunity to review this new information before the DEIS is finalized.	The individual comments from Exhibit 1 are addressed separately below.
18	28	[ATT1:] EXHIBIT 1 SWC specific Comments in multiple resource categorie	The individual comments from this Exhibit are addressed separately below.
18	29	[ATT1: Page 1-5] [Referenced text: Changes in water operations under Alternatives 1 through 3 could potentially increase Delta Smelt entrainment risk, reduce food availability, and reduce habitat extent.] [Comment: The management of the turbidity bridge should reduce entrainment risk compared to the No Action Alternative. Turbidity bridge management was	The text referenced by the commenter is speaking generally to the potential for increased entrainment risk, based on factors such as increased south Delta exports and lower Old and Middle River flows, rather than specifically considering other factors such as turbidity bridge management to which the commenter is specifically referring. It is expected that entrainment would be limited with the measures included Alternative 1, which include turbidity bridge management among others. Refer to the EIS at Section 3.4.5.6.2,

Ltr#	Cmt#	Comment	Response
		not prescribed by the 2008 BiOp therefore the No Action Alternative should not be given credit for it.]	Additional Real-Time OMR Restrictions and Performance Objectives, for discussion of turbidity bridge avoidance. Refer to Appendix O, Section O.3.2.8.1, Delta Smelt, for discussion of potential changes to Delta smelt under the No Action Alternative, and to Section O.3.3.8.1, Delta Smelt, for discussion of potential changes to Delta smelt due operations and management actions under Alternative 1.
18	30	[ATT1: Page 1-8] [Referenced text: The specific mechanism for the potential effects of Delta outflow on Longfin Smelt is unknown, as the extent of correlation with habitat extent does not appear sufficient to explain the patterns in relative abundance (Kimmerer et al. 2013).] [Comment: The controversy on Delta Outflow needs more context. It is not clear that this is a controversy. It should be noted that local hydrology versus Delta outflow is a controversy that affects the interpretation and structure of the analysis.]	With respect to the issue of hydrology versus Delta outflow that the commenter suggests should be noted, the EIS, at Section 1.4.1.1.2, Delta outflow as a driver of Longfin Smelt population dynamics, provides reference to the study of Maunder et al. (2015), which found general hydrological conditions, including local hydrology (Napa River runoff), was a better predictor of population dynamics than Delta outflow.
18	31	[ATT1: Page 1-8] [Referenced text: previous studies did not suggest a link to Delta Smelt population dynamics (e.g., Kimmerer et al. 2009), whereas more recent preliminary analyses have provided some support for a potential positive effect of outflow (IEP MAST 2015).] Comment: A 5+ year old "preliminary" analysis is hardly of equal weight of a peer-reviewed scientific paper. If spring outflow is receiving renewed attention, why hasn't the "preliminary" analysis been formalized and subjected to peer-review? The MAST analysis is also qualified by a disclaimer that states that it has not been subject to peer review and should not be used in management decision-making. The DEIS should note that this analysis has not been subjected to peer review and that no peer reviewed studies have reached this conclusion.]	As the EIS text notes in Section 1.4.1.1.1, Importance of Delta outflow for Delta Smelt (spring/summer/fall), the IEP MAST (2015) analyses are preliminary; other studies such as those that are cited are peer-reviewed. The EIS is acknowledging that there are preliminary analyses available, but these are not relied upon for the analysis of alternative impacts, consistent with the disclaimer that the commenter notes. No change was made to the EIS.
18	32	[ATT1: Page 1-8] [Referenced text: Areas of Controversy for Delta Smelt and Longfin Smelt] Comment: Interpretation of abundance indices should be added as another area of controversy. The Delta Smelt indices used in many of the cited examples have unquantified uncertainty. Understanding the relative importance of delta outflow (when/how much) depends in part in having abundance or occupancy	Reference to catchability uncertainty has been added with reference to the Latour (2016) study in the EIS at Section 1.4.1.1.1, Importance of Delta outflow for Delta Smelt (spring/summer/fall). This modification does not change conclusions identified in the EIS.

Ltr#	Cmt#	Comment	Response
		estimates that account for the uncertainty generated by e.g. sampling gear inefficiency (This statement also applies to the Longfin Smelt section, though that section does mention the Latour catchability study)]	
18	33	[ATT1: Page 1-8] [Referenced text: Latour's (2016) study noted that the relationship with suspended sediment concentration could reflect catchability of Longfin Smelt by the sampling gear;] Comment: Others also have recently identified factors affecting the catch or presence of Longfin Smelt, including suspended sediment concentrations. (Mahardja et al., 2017; Peterson and Barajas, 2018). The SWC [State Water Contractors] request that these additional citations be added to the DEIS. Mahardja, B., Young, M.J., Schreier, B., Sommer1, T. 2071. Understanding imperfect detection in a San Francisco Estuary longterm larval and juvenile fish monitoring programme. Fisheries Management and Ecology, 24(6):488-503. Peterson, J.T and M.F. Barajas. 2018. An Evaluation of Three Fish Surveys in the San Francisco Estuary, California, 1995–2015. San Francisco Estuary and Watershed, 16(4), Article 2.]	The EIS has been augmented with the addition of the Peterson and Barajas (2018) reference suggested by the commenter in Section 1.4.1.1.2, Delta outflow as a driver of Longfin Smelt population dynamics; the suggested Mahardja et al. (2017) reference was not added because it does not explicitly make the connection to catchability, which is the point of the sentence that the commenter was referring to. This modification does not change conclusions identified in the EIS.
18	34	[ATT1: Page 1-8] [Referenced text: Various studies have shown positive correlations between Longfin Smelt and winter/spring Delta outflow (or negative correlations with X2)] [Comment: All studies listed in this section rely on the long-term monitoring surveys, with the exception of Grimaldo et al. 2018 and Parker et al. 2018. The monitoring surveys are not well designed to capture the full spatial and temporal distribution of Longfin Smelt (as demonstrated by the Grimaldo et al. and Parker et al. studies). The discussion should acknowledge that the referenced analyses are only considering Longfin Smelt in the Delta, which is only a portion of the species range. The referenced analyses do not account for changes in distribution to and from the areas that are monitored in the Delta.]	Acknowledgement of uncertainty in relation to water operation effects given limited survey distribution, as the commenter suggests, is provided in the EIS at Section 1.4.1.3, Distribution of Longfin Smelt and spawning locations.
18	35	[ATT1: Page 1-9] [Referenced text: Maunder and Deriso (2011) interpreted their own modeling results as "some support for a negative relationship" of entrainment losses, ….] [Comment: This statement is taken out of context. The authors dismissed the support for this covariate in the same paper. The DEIS's discussion of Maunder	The commenter suggests that Maunder and Deriso (2011) "ultimately rejected" support for entrainment. Maunder and Deriso (2011, p.1303) specifically stated: "We found some support for adult entrainment, but it was not one of the main factors, and the coefficient was unrealistically high and highly correlated with the coefficient for water clarity." It is not clear that this is rejection and

Ltr#	Cmt#	Comment	Response
		and Deriso (2011) should be corrected to reflect that entrainment was ultimately rejected.]	appears consistent with the text of the EIS in Section 1.4.1.2, Population-level importance of entrainment on Delta Smelt, in noting some support for adult entrainment. No change was made to the EIS.
18	36	[ATT1: Page 1-9] [Referenced text: …. whereas Rose et al. (2013) suggested that their own results were in agreement with Maunder and Deriso's (2011) results…] [Comment: The Rose et al. (2013) study devotes a significant portion of the discussion on how they disagree with Maunder and Deriso on the subject of entrainment. The DEIS's discussion of Rose et al. (2013) should be corrected]	The commenter suggests the EIS should be corrected because Rose et al. (2013) disagreed with Maunder and Deriso (2011) on the subject of entrainment. However, the DEIS is specifically referencing that Rose et al. (2013) suggested that their results were in agreement with Maunder and Deriso's (2011) results; the disagreement lies in the interpretation of the results, so no change has been made to the EIS in Section 1.4.1.2, Population-level importance of entrainment on Delta Smelt.
18	37	[ATT1: Page 1-9] [Referenced text: and provided more than "some" support for a population-level effect; subsequent investigation by Kimmerer and Rose (2018) supported Rose et al.'s (2013) view.] [Comment: These papers only provide small lines of evidence as they forced the covariates into the models. The statement that they provide more than some support is incorrect and overstates the conclusion. The DEIS's discussion of these studies should be corrected to reflect their actual conclusions.]	The commenter suggests that the EIS is incorrect with its discussion of the conclusions of the various cited studies, citing in particular that "more than some support" is incorrect. However, the EIS is citing almost exactly the language used by Rose et al. (2013, p.1268): "…we would term their [Maunder and Deriso 2011] Figure 8 results as providing more than "some" support for a negative effect of adult entrainment". It is acknowledged that Kimmerer and Rose's (2018) conclusions did not explicitly state that they found more than some support for population-level effects, so the text in the EIS has been changed to reflect Kimmerer and Rose's (2018 p.236) conclusion that "in some years, entrainment mortality is an important constraint on the population growth of Delta Smelt". Please also see response to comment 18-36.
18	38	[ATT1: Page 1-9] [Referenced text: Some studies have suggested limited export of food web materials from restored areas to adjacent habitat (Lehman et al. 2010; Kimmerer et al. 2018).] [Comment: Add Lehman et al. 2015 Lehman, P. W., Mayr, S., Liu, L., & Tang, A. (2015). Tidal day organic and inorganic material flux of ponds in the Liberty Island freshwater tidal wetland. SpringerPlus, 4(1), 273.]	The suggested reference has been added to the EIS in Section 1.4.1.3.1, Potential benefits of tidal habitat restoration. This modification does not change conclusions identified in the EIS
18	39	[ATT1: Page 1-9] [Referenced text: Factors influencing food availability] [Comment: It is our understanding that at least some of the reduction in phyto/zoo plankton abundance and/or shift in their community was attributed to the clam invasions. Clams may mask the benefits of upgrading the Sacramento Regional Wastewater Treatment Plant (and tidal habitat restoration benefits mentioned in the previous section). There is also a hypothesis that changes in	The EIS Section 1.4.1.3.2, Factors Influencing food availability, that the commenter refers to is focusing on an area of controversy related to this topic, i.e., the potential link to changes in nutrient composition. The effect of clams was not judged to be an area of controversy and therefore was not explicitly discussed as such in the EIS. No changes were made to the EIS.

Ltr#	Cmt#	Comment	Response
		nutrients created the conditions that facilitated the clam invasion (Glibert et al. 2011). A discussion of clams should be included in this section. Glibert, P.M., D. Fullerton, J.M. Burkholder, J.C. Cornwell, and T.M. Kana. 2011. Ecological stoichiometry, biogeochemical cycling, invasive species, and aquatic food webs: San Francisco Estuary and comparative systems. Reviews in Fisheries Science, 19(4):1-60]	
18	40	[ATT1: Page 1-9] [Referenced text: Factors influencing food availability] [Comment: The role of flows in food availability is also an area of controversy that should be described in this section. For example, Glibert et al. 2014 state, “We suggest that management practices that favor higher rates of flow may narrow the “window of opportunity” for phytoplankton growth, potentially leading to low productivity and food limitation for fish. Under high flow, a condition of “washout” may develop where both chlorophyll and unassimilated nutrients are transported out of the bay, and the phytoplankton that do develop are less favorable in terms of community composition for supporting the upper food web.” Dugdale et al. 2012 and 2013 also describe a potential flow relationship to food availability. Glibert, PM, RC Dugdale, F Wilkerson, AE Parker, J Alexander, E Antell, S Blaser, A Johnson, J Lee, T Lee, S MUrasko and S Strong. 2014. Major – but rare – spring blooms in 2014 in San Francisco Bay Delta, California, a result of the long-term drought, increased residence time, and altered nutrient loads and forms. Journal of Experimental Marine Biology and Ecology, 460:8-18. Dugdale R, F Wilkerson, AE. Parker, A Marchi, K Taberski. 2012. River flow and ammonium discharge determine spring phytoplankton blooms in an urbanized estuary. Estuarine, Coastal and Shelf Science 115: 187- 199. Dugdale, R.C., Wilkerson, F.P., Parker, A.E. 2013. A biogeochemical model of phytoplankton productivity in an urban estuary: The importance of ammonium and freshwater flow. Ecological Modelling, 263: 291– 307.]	A brief discussion of these factors has been added to the EIS at Section 1.4.1.3.2, Factors influencing food availability, that includes the citations provided by the commenter, and also discusses studies suggesting a positive link between food availability and flow. This modification does not change conclusions identified in the EIS.
18	41	[ATT1: Page 1-9] [Referenced text: …the extent to which nutrient composition affects spring phytoplankton blooms and therefore Delta Smelt zooplankton prey has a large amount of uncertainty (see summary by IEP MAST 2015, p.71).] [Comment: Spring is not the only season when alteration of phytoplankton blooms and subsequent zooplankton may have occurred in response to changes	The comment is acknowledged, although the focus on spring reflects the focus on this period in studies such as the Dugdale et al. (2013) paper cited by the commenter in Comment 18-40, reflecting potentially lower influence of clam predation in spring than summer. No changes were made to the EIS.

Ltr#	Cmt#	Comment	Response
		in nutrients. Ball and Arthur 1979, report on the occurrence of regular spring and summer blooms in Suisun Bay. Ball, M.D. and J. F. Arthur. 1979. Planktonic chlorophyll dynamics in the Northern San Francisco Bay and Delta, (265-286). Within SAN FRANCISCO BAY: THE URBANIZED ESTUARY Investigations into the Natural History of San Francisco Bay and Delta With Reference to the Influence of Man. TJ Conomos (ed). Pacific Division Pacific Division of the American Association for the Advancement of Science c/o California Academy of Sciences Golden Gate Park San Francisco, California 94118.]	
18	42	[ATT1: Page 1-11 and 1-12] [Referenced text: Though tidally-averaged net flows are unlikely to disrupt juvenile salmonid navigation in the tidal Delta, olfactory or chemical cues of Sacramento River waters being drawn into the South Delta provides an alternative mechanism of navigational disruption. (p. 1-11) Another difficulty for assessing this hypothesis is that due to low San Joaquin River inflows and export operations, there is almost always a relatively large amount of Sacramento River water moving into the South Delta. (p. 1-12)] [Comment: This section needs to include a statement regarding the uncertainty of the magnitude of Sacramento River water needed in the South Delta to influence migration behavior of juvenile salmonids.]	The narrative in the referenced section (1.4.2.1.1) provides a detailed description of uncertainty on this topic. Uncertainty in the chemical cue is acknowledged, specifically: “While available science suggests hydrodynamic effects of exports are different and less consequential than previously hypothesized (see Hydrodynamic Effects on Juvenile Salmonids in the Tidal Delta) uncertainty remains about the importance and possible effect of chemical cues originating from natal streams in guiding juvenile salmonid migration through the tidal Delta.” Further details on the topic of juvenile salmonid navigation in the tidal Delta are also available in Appendix O, Section O.3.3.8, Bay-Delta.
18	43	[ATT1: Page 3-33 (2 places)] [Referenced text: The loss threshold and loss tracking for hatchery Winter-Run Chinook Salmon does not include releases into Battle Creek] Comment:] Suggest adding description of how Battle Creek releases will be distinguished from other salmon when tracking loss against the threshold	Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Development, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations. Battle Creek releases of reintroduced winter run Chinook salmon will receive a primary and secondary visual mark to differentiate from visually marked (ad-clipped) winter run Chinook to differentiate without need for mortality in monitoring. However, the primary clip (adipose fin) leads to lethal take at the facilities to read a CWT for all ad-clipped juvenile Chinook salmon. The Battle Creek winter run Chinook salmon will have a unique CWT from Livingston Stone NFH winter run Chinook.
18	44	[ATT1: Page 3-33] [Referenced text: Loss (for development of thresholds and ongoing tracking) for Chinook salmon would be based on length-at-date criteria. (multiple places)]	Please see Master Response 7, Aquatic Resources, and Master Response 4, Alternatives Formulation, for responses to comments regarding the level of detail provided in the EIS for description of Alternative 1 components and operations.

Ltr#	Cmt#	Comment	Response
		[Comment: A majority of length-at-date ("LAD") winter-run fish salvaged at the facilities are not genetic winter-run, which is why for the last several years if Winter-run LAD fish are salvaged, genetic identification is used to confirm race, especially if salvaged fish may exceeded a threshold density that would reduce export operations. Suggest continuing to use genetic criteria, not LAD.]	Reclamation will continue to pursue using genetic criteria in salvage and other monitoring location to improve the accuracy of run identification. It is likely both LAD and genetic loss will be calculated throughout the salvage season for consideration in enumerating take and evaluating risk to populations.
18	45	[ATT1: Page 3-33] [Referenced text: If, at any time prior to 2024, Reclamation and DWR would exceed 50% of the cumulative loss threshold, Reclamation and DWR would convene an independent panel to review the actions contributing to this loss trajectory and make recommendations on modifications or additional actions to stay within the cumulative loss threshold, if any."] [Comment: Since the cumulative loss threshold is based on the average loss that occurred during 2010-2018 which included several drought years and relatively low salmon abundance levels, one of the possible reasons for exceeding the cumulative loss threshold is that salmon abundance levels increase in future years. Suggest revising so the independent panel review is not limited to making recommendations for actions to stay within the loss threshold, but also allowed to make recommendations for modifying the threshold if, for example, the exceedance is due to increased abundance levels such that proportional loss has not exceeded levels of concern.]	The language in the EIS regarding loss thresholds is consistent with the Biological Opinions issued by USFWS and NMFS and is not being revised.
18	46	[ATT1: Page 3-33] [Referenced text: During the year, if Reclamation and DWR exceed 50% of the annual loss threshold, Reclamation and DWR would restrict OMR to a 14-day moving average OMR index of no more negative than −3,500 cfs, unless Reclamation and DWR determine that further OMR restrictions are not required to benefit fish movement because a risk assessment shows that the risk is no longer present based on real-time information.] [Comment: This risk assessment needs to consider time of year, not just presence of fish in the system. If the annual loss threshold is in place until June 15th and 50% of the annual loss threshold is met in May, then it is unlikely that the other 50% of fish would be salvaged between May-June 30th given the time of year and that there is really only another month of the migration season. Suggest revising this discussion of the risk assessment to include consideration of the time of year.]	Please see the single year loss threshold information in the updated EIS at Section 3.4.5.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, and in the updated Appendix D, Alternatives Development Technical Memorandum, at Section 4.3.6.6.2, Additional Real-Time OMR Restrictions and Performance Objectives, that includes specific, quantifiable thresholds.
18	47	[ATT1: Page 3-34]	See response to comment 18-46.

Ltr#	Cmt#	Comment	Response
		[Referenced text: The −3,500 cfs OMR operational criterion adjusted and informed by this risk assessment would remain in effect for the rest of the season.] [Comment: There should be an off-ramp for the - 3,500 cfs OMR criterion if a risk assessment determines that the risk is no longer present. Suggest amending statement to: "The −3,500 cfs OMR operational criterion adjusted and informed by this risk assessment would remain in effect for the rest of the season or until Reclamation and DWR determine that further OMR restrictions are not required to benefit fish movement because a risk assessment shows that the risk is no longer present based on real-time information."]	
18	48	[ATT1: Page 3-34] [Referenced text: The −2,500 cfs OMR operational criterion adjusted and informed by this risk assessment would remain in effect for the rest of the season.] [Comment: There should be an off-ramp for the -2,500 cfs OMR criterion if a risk assessment determines that the risk is no longer present. Suggest amending statement to: "The −2,500 cfs OMR operational criterion adjusted and informed by this risk assessment would remain in effect for the rest of the season or until Reclamation and DWR determine that further OMR restrictions are not required to benefit fish movement because a risk assessment shows that the risk is no longer present based on real-time information."]	See response to comment 18-46.
18	49	[ATT1: Page 3-35] [Referenced text: When more than 95% of salmonids have migrated past Chipps Island, as determined by their monitoring working group, or] [Comment: Unless this off-ramp applies to all salmonids of all age groups, it should specify which salmonids it is addressing, Suggest modifying sentence to "95% of all listed juvenile salmonids" or "of all Winter-run juvenile salmonids"]	The intent of the OMR criteria is to include all listed Chinook Salmon that would migrate past Chipps Island prior to June 30th.
18	50	[ATT1: Page 3-37] [Referenced text: Establish contiguous low salinity habitat from Cache Slough Complex to Suisun Marsh.]	In the same section of the EIS that the commenter is referring to (Section 3.4.5.8, Delta Smelt Summer-Fall Habitat), the description of low salinity habitat includes freshwater and refers to salinity of 0-6 ppt, thereby addressing the commenter's concern. Proposed operations would not result in salinity

Ltr#	Cmt#	Comment	Response
		[Comment: Cache slough is not low salinity habitat, which the DEIS defines as 0.5- 6 psu. This needs to be changed to avoid inaccurately suggesting that salinity intrusion would go up into the Cache Slough Complex.]	intrusion into the Cache Slough Complex. Other analyses in the EIS use a definition of low salinity zone similar to 0.5-6 ppt as the commenter suggest, to acknowledge that the majority of Delta Smelt appear to use that area rather than freshwater, while recognizing that many also occur in freshwater throughout their lives (see EIS at Appendix O, Section O.2.10.1.7, Delta Smelt). No edits were made to the EIS in response to this comment.
18	51	[ATT1: Page 3-43] [Referenced text: Section 3.4.8.7 Four Year Reviews includes which topics would be reviewed every four years.] [Comment: Entrainment and Incidental Take Level should be added to this list]	Reclamation and DWR could incorporate additional information into the reviews in coordination with local, state, and federal partners.
18	52	[ATT1: Page 3-51] [Referenced text: 3.7.9.1 Agricultural Water Use Efficiency … Under the No Action Alternative, Reclamation already requires CVP contractors to implement cost-effective best management practices (BMPs) to manage water use, based on CVPIA Section 3405(e). ... Alternative 4 would increase water use efficiency above current and proposed practices.] [Comment: Updated legislation from 2018, SB 606 and AB1668, require water use efficiency beyond CVPIA EWMP's, these requirements should be mentioned: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Making-Conservation-a-CaliforniaWay-of-Life]	The legislation referred to by the commenter enacts water use efficiency requirements required by the State of California and are not enforceable by Reclamation.
18	53	[ATT1: Page 3-51] [Referenced text: 3.7.9.2 Municipal and Industrial Water Use Efficiency … a substantial amount of M&I water use efficiency has already been implemented or is planned for implementation under the No Action Alternative. California Executive Order B-37-16 and Senate Bill X7-7 have pushed M&I water providers to implement cost-effective measures to increase water use efficiency. M&I water providers have already implemented aggressive efficiency measures as part of the No Action Alternative. Under Alternative 4, this component would implement additional water use efficiency measures beyond what is already implemented or planned for implementation.] [Comment: Updated legislation from 2018, SB 606 and AB1668, require water use efficiency beyond CVPIA EWMP's, these requirements should be	The legislation referred to by the commenter enacts water use efficiency requirements required by the State of California and are not enforceable by Reclamation.

Ltr#	Cmt#	Comment	Response
		mentioned: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Making-Conservation-a-California-Way-of-Life]	
18	54	[ATT1: Page 4-17] [Referenced text: 4.2.3.7 Sacramento Splittail] [Comment: The distribution of Splittail is wider than described in the DEIS; extending from the Petaluma to the Sacramento and San Joaquin Rivers. Two subpopulations of Splittail are recognized. It is difficult to tell whether both are being discussed in the DEIS. There is discussion of the Central Valley subpopulation but it is hard to tell if the Petaluma/Napa subpopulation is also being discussed. It should be noted whether this document is making that distinction in subpopulations and if so when discussing them in the DEIS refer to the specific subpopulation segment. The description provided in this section does not apply to all Splittail.]	The comment notes that the Splittail discussion in the DEIS did not identify which of the two genetically distinct populations of the species is being addressed. The population addressed in the DEIS is the Central Valley population. The DEIS has been revised to clarify this.
18	55	[ATT1: Page 4-18,19] [Referenced text: Quantitative data on populations are extremely limited, but loss and degradation of historical habitats suggest populations may have declined.] [Comment: We [State Water Contractors] are unaware of any scientific studies that present this conclusion for river lamprey. If this is true, add a citation.]	This comment requests a citation for the statement that "…loss and degradation of historical habitats suggest populations may have declined." A citation, Moyle et al. 2015, has been added to the EIS text. Moyle et al. state (p. 2 of Western River Lamprey section): "…it is likely that populations are declining because the Sacramento, San Joaquin and Russian rivers, along with their tributaries, have been severely altered by dams, diversions, development, agriculture, pollution, and other factors."
18	56	[ATT1: Page 4-38, 39] [Referenced text: After entry into the Delta, juvenile Winter-Run Chinook Salmon remain and rear in the Delta until they are 5–10 months of age (based on scale analysis) (Fisher 1994; Myers et al. 1998). Although the duration of residence in the Delta is not precisely known, del Rosario et al. (2013) suggested that it can be up to several months.] [Comment: The statement overstates the extent winter run rely on the Delta in its current state. The scale data and catch data relied upon for the Fisher, Myers, and Rosario studies does not get at how long individuals rear in the Delta. The winter run population may be present in the Delta for 5-10 months, but individuals themselves are rarely spending that much time in the Delta. More recent work utilizing otoliths suggests only a fraction of winter run use the Delta as juveniles (18%) (Phillis et al., 2018). Acoustic telemetry data suggest juvenile salmon smolts migrate through the Delta on the order of days-	Thank you for the correction. The EIS has been updated with information from Phillis et al. and Perry et al. to be consistent with your comment.

Ltr#	Cmt#	Comment	Response
		to-weeks, not the 5- 10 months as stated in the DEIS (Perry et al. 2018, Perry in prep). Suggest adding this clarification to the DEIS. Phillis, CC, AM Sturrock, RC Johnson, and PK Weber. 2017. Endangered winter-run Chinook salmon rely on diverse rearing habitats in a highly altered landscape. Biological Conservation, 217:358-362. Perry, RW, AC Pope, JG Romine, PL Brandes, JR Burau, AR Blake, AJ Ammann, and CJ Michel 2018. Flow-mediated effects on travel time, routing, and survival of juvenile Chinook salmon in a spatially complex, tidally forced river delta. Can. J. Fish. Aquat. Sci.]	
18	57	[ATT1: Page 4-39] [Referenced text: The peak timing of the out-migration of juvenile Winter-Run Chinook Salmon through the Delta is corroborated by recoveries of Winter-Run-sized juvenile Chinook Salmon from the Skinner Fish Facility and the TFCF in the south Delta (NMFS 2009a).] [Comment: This statement needs to be qualified with a statement about the uncertainty created by using length-at-date to determine run ID. Genetic fall and latefall run fish are commonly “winter run sized” during the outmigration peak (Harvey et al. 2014) Harvey, B.N., D.P. Jacobson, and M.A Banks. 2014. Quantifying the Uncertainty of a Juvenile Chinook Salmon Race Identification Method for a Mixed-Race Stock. North American Journal of Fisheries Management, 34:6, 1177-1186.]	The referenced text correctly characterizes this observation as based on “size”. Readers unfamiliar with uncertainties at length-at-date (LAD) race classification can find appropriate explanation in the referenced source. That LAD can be uncertain does not change the point being made that peak outmigration of juvenile Winter-run Chinook Salmon occurs in May.
18	58	[ATT1: Page 4-39] [Referenced text: Juvenile Spring-Run Chinook Salmon show two distinct outmigration patterns in the Central Valley: out-migrating to the Delta and ocean during their first year of life as YOY,] [Comment: We question how much evidence there is that suggests spring run are reliant on the Delta for rearing in its current configuration. Citation is needed.]	Reclamation agrees Delta rearing of juvenile Spring-run Chinook salmon is an area of uncertainty because monitoring programs do not regularly distinguish between spring run and much more abundant fall run Chinook. A citation was added (Moyle 2002) to the EIS to support the information describing two outmigration patterns known in Central Valley Spring-run Chinook salmon (i.e., stream-type and ocean-type life histories). We are not aware of additional citations which either buttress or refute this depiction of how the Delta is used by spring run Chinook juveniles.
18	59	[ATT1: Page 4-40] [Referenced text:] Juveniles are believed to use the Delta for rearing for the first 1–3 years [Comment: We are unaware of any scientific studies that present this conclusion. If this is true, add citation.]	Sentence which precedes this sentence (within the same paragraph) provides the requested reference. Specifically: “Green Sturgeon are salvaged from the South Delta Project diversion facilities and are generally juveniles greater than 10 months but less than 3 years old (Reclamation 2008a).” The citation has been added at the end of the requested sentence for clarification.

Ltr#	Cmt#	Comment	Response
18	60	[ATT1: Page 4-41] [Referenced text: By spring, they move to freshwater areas of the Delta region, including the Sacramento River] [Comment: Change the word “they” to “most” as most of the fish move but not all.]	The suggested change has been made to the EIS at Section 4.8.2.7., Delta Smelt, in response to the comment. This modification does not change conclusions identified in the EIS.
18	61	[ATT1: Page 4-41] [Referenced text: Delta Smelt spawn over a wide area throughout much of the Delta, including some areas downstream and upstream as conditions allow.] [Comment: Please clarify whether the reference point for this statement is upstream or downstream of the Delta.]	The statement is referring to upstream and downstream of the Delta.
18	62	[ATT1: Page 4-42] [Referenced text: Longfin Smelt are anadromous and spawn in fresh or low salinity water in the Bay-Delta (Grimaldo et al.2017),] [Comment: Include Hobbs et al. 201012 as it was suggested in that analysis as well.]	It is acknowledged that the reference provided by the commenter provides and additional example supporting the statement, but it is not necessary to add this citation to make the point communicated in the EIS.
18	63	[ATT1: Page 4-41] [Referenced text: Seasonal patterns in abundance and occurrence in the nearshore ocean suggest that the population is at least partially anadromous (Rosenfield and Baxter 2007; Garwood 2017),] [Comment: The only non-anadromous subpopulation of Longfin smelt is in the landlocked Lake Washington. No evidence of a fresh or brackish water resident has been published. Garwood (2017) designates the species as anadromous. Suggest clarifying this.]	The description as written (“at least partially anadromous”) allows for the possibility of residing in high salinity, Bay-Delta water without fully going into the coastal ocean, for example, and does not preclude the possibility of full anadromy. No change is necessary to the EIS.
18	64	[ATT1: Page 4-42] [Referenced text: Sacramento Splittail are found primarily in marshes, turbid sloughs, and slow-moving river reaches throughout the Delta subregion (Sommer et al. 1997, 2008).] [Comment: Splittail are also found in Suisun Bay/Marsh and the tributaries of San Pablo Bay (Feyrer et al. 2015). Feyrer, Frederick, James Hobbs, Shawn Acuna, Brian Mahardja, Lenny Grimaldo, Melinda Baerwald, Rachel C. Johnson, and Swee Teh. "Metapopulation structure of a semi-anadromous fish in a dynamic environment." Canadian journal of fisheries and aquatic sciences 72, no. 5 (2015): 709-721.]	Thank you for the correction. The EIS has been updated in this section to be consistent with your comment.

Ltr#	Cmt#	Comment	Response
18	65	[ATT1: Page 4-44] [Referenced text: While this apex predator eats a variety of other species, Central Valley Chinook Salmon (all runs) are estimated to make up approximately 40% of the killer whale diet when killer whales are off the California coast and 18% of the killer whale diet when the killer whales are off the Oregon coast.] [Comment: Citations to support statement need to be included.]	The paragraph referred to by the commenter, within Section 4.9.1, Pacific Ocean Habitat of the Southern Resident Killer Whale, has a citation provided at the end of the paragraph; however, the citation needed corrections made. The citation has been corrected to reflect the updated Biological Assessment date and author, and the full reference has been added in Appendix B, References.
18	66	[ATT1: Page 5-9] [Referenced text: The EC and chloride modeling results presented in figures 5.2-4 and 5.2-5 do not make sense.] [Comment: Alternative 1 includes a Summer-Fall habitat action, but the results show that Alternative 1 would result in EC and chloride degradation in September to December as compared to the No Action Alternative. The DEIS should acknowledge that the modeling does not include the Summer-Fall Action, so the results are not reflective of Alternative 1.]	A discussion regarding how EC and chloride levels would be different from those presented in modeling results due the implementation of a summer-fall Delta Smelt habitat action is presented in the final paragraph in Section 5.2.1.3, Bay-Delta, of the DEIS, prior to the figures cited in this comment.
18	67	[ATT1: Page 5-71] [Referenced text: Reductions in Delta outflow during spring, summer, and fall could negatively affect Delta Smelt food availability in the Suisun Bay and Marsh region…] [Comment: There is a high degree of uncertainty regarding the relationship between outflow and Delta Smelt food availability. Reductions in outflow may increase food availability of some species. Kimmerer 2002 found a relationship with X2 and E. affinis and E. acartia in spring, but not summer and no relationship with chlorophyll or rotifers. Also, see Comment on page 1-9 regarding flow relationship to food availability. This statement should be revised to "Reductions in Delta outflow during spring, summer, and fall could negatively or positively affect Delta Smelt food availability in the Suisun Bay and Marsh region…" Kimmerer, W.J. 2002. Effects of freshwater flow on abundance of estuarine organisms: physical effects or trophic linkages?. Mar Ecol Prog Ser, 243: 39–55.]	The statement of potential negative effects on food availability based on reductions in spring, summer, and fall Delta outflow is based on the relationship that Kimmerer (2002) found for E. affinis (spring), as well as more recent studies by Kimmerer and others linking Pseudodiaptomus forbesi abundance in the low salinity zone to Delta outflow, which was for the July-September period and therefore includes the summer and fall periods. It is unclear why the commenter would suggest adding text that reductions in Delta outflow could increase or decrease food availability, given that Kimmerer (2002) did not find such a relationship; the EIS text has not been changed.
18	68	[ATT1: Page 5-124]	Please refer to Master Response 4, Alternatives Formulation, regarding refinements to alternatives made in response to agency and public comments on the Draft EIS.

Ltr#	Cmt#	Comment	Response
		[Referenced text: Changes in water operations under Alternative 1 could potentially increase Delta Smelt entrainment risk, reduce food availability, and reduce habitat extent.] [Comment: The management of the turbidity bridge should reduce entrainment risk compared to the No Action Alternative. Turbidity bridge management was not prescribed by the 2008 BiOp therefore Alternative 1 should reduce entrainment compared to the No Action Alternative. “Habitat extent” should be revised to “physical habitat extent” The description of Alternative 1 should be updated as the proposed project includes a Summer-Fall Habitat Action with Suisun Marsh Salinity Control Gate operations and an 80 km X2 (Sept-Oct), subject to off-ramp criteria. The food analysis is very uncertain and that uncertainty should be explained in the DEIS.]	Regarding the description of Alternative 1, Reclamation would include additional measures to achieve additional benefits, such as operating the Suisun Marsh salinity control gates for an additional 60 days between June 1 and October 31 in below normal and above normal, years. Please see the Final EIS, Section 3.4.5.8, for more about how Reclamation could meet biological goals and objectives with respect to the 2 ppt isohaline at 80 km from the Golden Gate.
18	69	[ATT1: Page 5-125 and 1-5] [Referenced text: Changes in water operations under Alternative 1 potentially could negatively affect Longfin Smelt abundance and increase south Delta entrainment risk.] [Comment: Based on the analysis, this impact does not appear to be significant. Suggest adding a clarifying statement to that effect.]	With respect to potential effects on Longfin Smelt abundance, please see Master Response 7. With respect to entrainment risk, as the commenter notes, the more detailed discussion provided in Appendix O (p.O-301) discusses the relative magnitude of the analysis.
18	70	[ATT1: Page Appendix O: throughout] [Referenced text: Tables that show maximum Water Temperatures for various rivers, Average of All Water Year Types (Differences >1°F Are Highlighted)] [Comment: The DEIS does not explain why a difference of >1°F is highlighted or why that >1°F difference would be significant. Additionally, the DEIS does not explain what the threshold is for a temperature change that would result in changes of concern for the species. Suggest adding this information so that the public can better understand the aspects of the analysis that the DEIS focuses on.]	Highlighted water temperatures within tables are intended to identify alternative scenarios that would have a substantive influence on water temperatures (qualitative). The highlighted text does not indicate significant effects. Potential effects of altered water temperatures for each of the alternatives are discussed within Appendix O, Aquatic Resources, Section O.3, Evaluation of Alternatives. Refer to the discussions of effects of water temperature variation to each species in Section O.3, which includes descriptions of modeled water temperatures.
18	71	[ATT1: Page O-71] [Referenced text: Three of the most prominent resident pelagic fishes captured in the surveys (Delta Smelt, Longfin Smelt, and Striped Bass) have shown substantial long-term population declines (Kimmerer et al. 2000; Bennett 2005; Rosenfield and Baxter 2007).]	The statement is not intended to imply relative abundance, merely the prominence of the fish concerned, which also considers factors such as interest because of listing. No changes were made to the EIS.

Ltr#	Cmt#	Comment	Response
		[Comment: Delta Smelt was never common compared to Longfin Smelt and Striped Bass in the surveys. Suggest revising the statement.]	
18	72	[ATT1: Page O-71] [Referenced text: This suggests that X2 is indexing other environmental variables or processes rather than simple extent of habitat (Baxter et al. 2010).] [Comment: It is also possible that X2 is not indexing other environmental variables related to habitat. Salinity was used with two other covariates and still only accounted for 25% of the variance. (Feyrer et al. 2007.) In Manly et al. (2015), the authors suggested and showed that using geography could explain just as well the variance that was characterized by including X2. Suggest adding a clarification that a number of different variables appear to fit the specific variance that X2 characterizes.]	Reference to Manly et al. (2015) has been added to the EIS text in Section O.2.10.1, Fish in the Delta. This modification does not change conclusions identified in the EIS.
18	73	[ATT1: Page O-79] [Referenced text: During summer and fall, the distribution of juvenile Delta Smelt rearing is influenced by the position of the low salinity zone (as indexed by the position of X2), although their distribution can also be influenced by temperature and turbidity (Bennett 2005; Feyrer et al. 2007, 2010; Kimmerer et al. 2009; Sommer and Mejia 2013).] [Comment: Using the term “influenced” suggests causation. Change to “correlated”. There has not been any validated mechanistic relationship that leads from X2 to increasing abundance. Delta Smelt can survive in a far greater salinity range in the lab, suggesting that salinity is not limiting the species in the wild. Suggest revising the DEIS accordingly. This discussion fails to acknowledge that not all Delta Smelt rear in or in relation to the low salinity zone. There are fresh-water resident Delta Smelt. (Bush 2017) The DEIS discussion should be revised to reflect that Delta smelt do naturally spawn in freshwater habitats as well. The discussion should also take into account Murphy and Weiland (2019), referenced above.]	The statement is referencing Delta Smelt distribution in relation to X2 and other factors, not making a link to abundance as the commenter suggests, although the text has been revised in the manner suggested by the commenter to be more correct in terms of statistical association rather than influence. The commenter is incorrect that the discussion fails to acknowledge that not all Delta Smelt rear in or relation to the low salinity zone; such acknowledgement was provided in the EIS at Appendix O, Section O.2.10.1.7, Delta Smelt: ”Some Delta Smelt also rear in upstream areas such as the Cache Slough complex and Sacramento Deep Water Ship Channel, depending on habitat conditions (Sommer and Mejia 2013).”
18	74	[ATT1: Page O-79] [Referenced text: Delta Smelt feed primarily on zooplankton, and Nobriga (2002) showed that Delta Smelt larvae with food in their guts typically cooccurred with higher calanoid copepod densities.] [Comment: The reverse was found in Hammock et al. 2017 for juveniles and subadults.	The commenter appears to be suggesting that Hammock et al. (2017) found evidence for an inverse relationship between Delta Smelt larvae and subadult food consumption and density of zooplankton prey in their environment. In fact, Hammock et al. (2017) found a generally similar pattern to Nobriga (2002), at least in terms of greater stomach fullness being generally associated with greater zooplankton density, at least to a satiating response (see Figure 5 of Hammock et al. 2017).

Ltr#	Cmt#	Comment	Response
		Suggest adding a description of this nuance as the simplistic relationship that is being suggested by Nobriga (2002) is not shown for the later lifestages.]	
18	75	[ATT1: Page O-80] [Referenced text: In summary, the report concluded that Delta Smelt likely benefitted from the following favorable habitat conditions in 2011:] [Comment: This summary ignores the fact that two of these factors were shared with 2006. What really set 2011 apart was temperature. (See Draft FLOATMAST 2019.) The inclusion of the other factors implies that they were not present in the other years. 2006 was wet, 2005 was above normal. Both had high outflow and westward X2 but neither showed increases in survival. The same is true for 2017. Suggest describing these nuances in the summary of the report.]	The EIS was updated in Appendix O. A footnote was added to acknowledge the nuance. The EIS also erroneously described the low salinity zone as being 'located more toward Suisun Bay in 2010', which has been corrected in the EIS to indicate 2011 instead of 2010 as the original IEP MAST (2015) summary did not make reference to the year but was discussing 2011.
18	76	[ATT1: Page O-81] [Referenced text: ….more recent studies suggest hatching and early rearing occurs in a much broader region and higher salinity (2–12 ppt) than previously recognized (Grimaldo et al. 2017).] [Comment: Suggest revising this statement to clarify that the "much broader region" described includes the whole estuary and not just the Suisun/Delta region. That has been a mistake by previous management and a frustration for many researchers (such as Wim Kimmerer, Peter Moyle, and Josh Collins) that there is too much focus on upstream areas.]	It would be incorrect to conclude that 2-12 ppt includes the whole estuary as the commenter suggests. The location of 2-12-ppt salinity is dependent on factors such as Delta outflow and flow from other tributaries. Inference based on Grimaldo et al. (2017) is limited to the Delta and Suisun Bay/Marsh, as well as Napa River, for these were the geographic areas that they studied. No change was made to the EIS.
18	77	[ATT1: Page O-81] [Referenced text: Seasonal patterns in abundance and occurrence in the nearshore ocean suggest that the population is at least partially anadromous (Rosenfield and Baxter 2007; Garwood 2017),] [Comment: Garwood states the species is anadromous with no ambiguity. Rosenfield and Baxter 2007 no longer reflects best available science. Suggest making this correction.]	Please see response to comment 18-63. Also refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science.
18	78	[ATT1: Page O-81] [Referenced text: The abundance of age 0 and older fish is best indexed by the Fall Midwater Trawl and Bay Study, while the abundance of larvae and young juveniles is best indexed by the 20-mm survey.]	It is acknowledged that there are shortcomings in the indices as the commenter notes (and as discussed in the EIS at Section O.2.10.1.8, Longfin Smelt), but the point the text is making is that these represent the best surveys of those available for indexing relative abundance trends, recognizing that there are limitations. No changes were made to the EIS.

Ltr#	Cmt#	Comment	Response
		[Comment: The FWMT survey does not represent the best index. Its spatial coverage alone biases its index. The Bay Study is superior. Suggest noting that there is some inherent spatial bias in the FMWT that should be taken into account when reading its results. The 20 mm index does not do a good job as an index for the larval and juvenile Longfin Smelt life stages. Under higher Delta outflow the index goes down. This seem at odds with the outflow relationship described by Kimmerer 2002. This is due to the spatial bias of the survey. Suggest that the word "best" be removed as it is not the best since there is no other survey to compare it to, and leaves some significant informational gaps.]	
18	79	[ATT1: Page O-81] [Referenced text: A synthesis of prior studies conducted by USFWS in its 12-Month Finding on a Petition to List the San Francisco Bay-Delta Population of the Longfin Smelt as Endangered or Threatened (USFWS2012) reported that increased Delta outflow in winter and spring is the largest factor possibly affecting Longfin Smelt abundance] [Comment: Maunder et al. 2015 showed that Napa River outflow was just as explanatory of this change. The two outflows are highly correlated suggesting there may be a larger regional aspect of the relationship. In Maunder et al. 2015 the results suggest that overall hydrology of Northern California and not just Delta or Napa outflow was likely. Suggest adding this clarification to the discussion.]	Reference to Maunder et al. (2015) and the link to general hydrology was provided in the EIS, e.g., at Section 1.4.1.1.2, Delta outflow as a driver of Longfin Smelt population dynamics, and in Appendix O, within Section O.3 Evaluation of Alternatives, such as at Section O.3.2.8.2, Longfin Smelt, Section O.3.3.8.2, Longfin Smelt, and Section O.3.4.3.2, Longfin Smelt.
18	80	[ATT1: Page O-82] [Referenced text: Habitat for Longfin Smelt is open water, largely away from shorelines and vegetated inshore areas except perhaps during spawning.] [Comment: This is not known as shoreline surveys in their habitat range are not conducted. As for vegetation, Grimaldo et al. 2017 noted that they found spawning adults and larvae near vegetated inshore areas. Suggest correcting this statement to note that at least one survey found Longfin Smelt in vegetated inshore areas.]	The text that the commenter is referencing is referring to inshore areas with submerged vegetation, and the inference regarding occurrence away from such vegetated areas is consistent with Grimaldo et al. (2017), who noted that occurrence of larvae in shallower habitats that they studied may reflect greater availability of habitat relative to the Delta, which is generally colonized by submerged aquatic vegetation. The text has been amended to include reference to occurrence in shallower habitats based on Grimaldo et al. (2017), as this point is relevant, although the reference to vegetated habitats suggested by the commenter is not made given the above explanation that vegetation was meaning submerged vegetation.
18	81	[ATT1: Page O-82]	Although the link with export operations has not been made statistically, it is a reasonable inference given evidence for relationships between entrainment (as represented by salvage) and export operations (as represented by Old and

Ltr#	Cmt#	Comment	Response
		[Referenced textThe entrainment of Longfin Smelt in recent years has been reduced likely because of changes in export operations and a decline in abundance.] [Comment: The link with export operations has not been tested. This statement needs to be substantiated with an analysis if it is to remain in the DEIS. There is no quantitative data provided to support the export relationship asserted in this statement.]	Middle River flows), as described by Grimaldo et al. (2009, as cited in the EIS, such as in Appendix O at Section O.2.10.1.8, Longfin Smelt, and at Section O.2.10.2.4, Fish Passage and Entrainment), and less exports in recent years as a result of implementation of the operational criteria in the USFWS (2008) Biological Opinion and DFG (2009) Incidental Take Permit.
18	82	[ATT1: Page O-85] [Referenced text: The major species influenced by current Delta hydrology include Delta Smelt, Longfin Smelt, Sacramento Splittail, White Sturgeon, juvenile Chinook Salmon, and Striped Bass (Jassby et al. 1995; Kimmerer 2002; Rosenfield and Baxter 2007; Kimmerer et al. 2009; Fish 2010; Perry et al. 2012; Thomson et al. 2010; Feyrer et al. 2010; Loboschefsky et al. 2012; Mount et al. 2012)] [Comment: Change the term “influenced” to “correlated.” It has not been established that the relationship is causative at least in regards to Longfin Smelt, Delta Smelt, Sacramento splittail, and sturgeon. Loboschefsky et al. 2012 did not complete independent analysis, rather it incorrectly cites other published work. Suggest removing this citation from this section.]	The suggested change has been made to the EIS in Section O.2.10.2, Aquatic Habitat. This modification does not change conclusions identified in the EIS.
18	83	[ATT1: Page O-87-88] [Referenced text: Toxic microcystins cause food web impacts at multiple trophic levels, and histopathological studies of fish liver tissue suggest that fish exposed to elevated concentrations of microcystins have developed liver damage and tumors (Lehman et al. 2005, 2008b, 2010).] [Comment: These publications, except 2010, cite other studies. Suggest at least deleting the other two publications and potentially adding Deng et al. 2012, Acuña et al. 2012. Most of the literature cited in the contaminant section is over 10 years old. There is a large body of more recent literature that should be incorporated into this section. Deng, D. F., Zheng, K., Teh, F. C., Lehman, P. W., & Teh, S. J. (2010). Toxic threshold of dietary microcystin (-LR) for quart medaka. Toxicon, 55(4), 787-794. Acuña, S., Baxa, D., & Teh, S. (2012). Sublethal dietary effects of microcystin producing Microcystis on threadfin shad, Dorosoma petenense. Toxicon, 60(6), 1191- 1202.]	The suggested citation changes have been incorporated into the EIS.

Ltr#	Cmt#	Comment	Response
18	84	[ATT1: Page O-89] [Referenced text: However, analysis by Perry et al. (2015) suggests that the mechanisms governing route selection are more complex.] [Comment: Perry et al. 2018 should also be discussed.]	Citation to Perry et al. (2018) was added to the EIS, both Perry et al. papers support the mechanisms and complexity of routing.
18	85	[ATT1: Page O-90] [Referenced text: Section O.2.10.2.4 Fish Passage and Entrainment, subsection Central and South Delta Fish Passage: The papers referenced in this section describing salmon passage and entrainment only include: Cunningham et al. (2015), Delaney et al. (2014)] [Comment: There are several recent papers that better summarize our understanding of fish passage and entrainment in the Delta. Those recent studies and reports should be included in this section. For example, the Salmon Scoping Team report (Salmonid Scoping Team 2017) which summarizes recent science relevant to key project related effects including passage and entrainment, states the following: Effects of exports outside the facilities likely diminish with distance (Cavallo et al. 2015). Near-field effects on fish at the export facilities are just one element of project-related mortality in the Delta; more negative OMR flows are a proxy measure for changed hydrodynamics within the Delta. Those hydrodynamic effects are likely to increase residence time in the Delta, even for fish not entrained into the fish salvage facilities, increasing their exposure to predation and other stressors within the central and south Delta. Near-field effects of the CVP and SWP export facilities such as entrainment and loss, and far-field effects, such as potential migratory disruptions at junctions or in channels, may be linked to salmonid survival via different mechanisms – so studies at one location may not be applicable Delta-wide. For example, a study that does not show an effect of OMR on salmonid routing at Turner Cut should not be cited as supportfor no OMR effects on through-Delta migration. Several studies have been conducted on salmonid migration through the Delta and provide an understanding of how Delta inflow affects juvenile salmonid survival including: Newman 2003, Perry et al. 2010, 2013, 2015, and 2018.	The EIS was updated with information and citations provided by the commenter.

Ltr#	Cmt#	Comment	Response
		Suggest adding the above citations and discussion to bolster the DEIS's discussion of these effects. Newman, K.B. 2003. Modelling paired release–recovery data in the presence of survival and capture heterogeneity with application to marked juvenile salmon. Statistical Modelling, 3: 157–177. Perry, RW, JM Plumb, SD Fielding, NS Adams, and DW Rondorf. 2013. Comparing Effects of Transmitters within and among Populations: Application to Swimming Performance of Juvenile Chinook Salmon. Transactions of American Fisheries Society, 142:901-911.]	
18	86	[ATT1: Page O-92] [Referenced text: O.2.10.2.5 Disease] [Comment: This section needs updating and additional focus. The section is on disease but it includes discussion of contaminants. Suggest moving the contaminant discussion to the Contaminant section. The Disease section should also include discussion of Micobacterium prevalence at the hatchery and in the field (Baxa et al. 2015). Baxa, DV, A. Javidmehr, SM Mapes, and SJ Teh. (2015). Subclinical Mycobacterium infections in wild Delta Smelt.]	It is acknowledged that there is overlap between the contaminants and disease sections in some of the discussion, but the information remains appropriate for inclusion in the disease discussion, so has not been relocated. It is also acknowledged that Baxa et al. (2015) provides additional information, but the discussion on diseases is providing a brief overview with example studies, with the main point of disease prevalence being consistent with Baxa et al. (2015), so this specific reference has not been added. No changes were made to the EIS.
18	87	[ATT1: Page O-94] [Referenced text: Section O.2.10.2.7 Predation. First sentence of last paragraph references that predation is known to occur in specific areas and references a Vogel 2011 paper.] [Comment: Include information on predation hotspots by Grossman et al. 2013 (report) and Grossman et al. 2016. Grossman, D.G. 2016. Predation on Fishes in the Sacramento–San Joaquin Delta: Current Knowledge and Future Directions. San Francisco Estuary & Watershed Science, 14(2): Article 8.]	The EIS has been updated per the commenter's recommendation.
18	88	[ATT1: Page O-289] [Referenced text: Seasonal operations under Alternative 1 would change the frequency of the low salinity zone being located within the productive habitat of Suisun Marsh and bay during some seasons, relative to the No Action Alternative.]	The text of the EIS in Appendix O has been changed per the commenter's suggestion to remove reference to 'productive'.

Ltr#	Cmt#	Comment	Response
		[Comment: It has been noted on several occasions and cited in this appendix and the DEIS that Suisun Bay is not very productive (e.g. Hammock et al. 2017). Suggest deleting "productive" from description or removing reference to Suisun Bay.]	
18	89	[ATT1: Page O-289] [Referenced text: As described in the ROC LTO BA, predation risk on Delta Smelt eggs/larvae is hypothesized to largely be a result of Silversides, and Silverside abundance is negatively correlated with June–September Delta inflow and March–May south Delta exports.] [Comment: It should be noted that the abundance of silversides is from Beach Seine data and that data is biased by inflow. The occupancy of silversides appears to shift downstream with flow and abundance may appear to be negatively correlated with flow but this may instead be due to the shift of Silversides outside of the survey range. Suggest adding these potential alternative factors to the DEIS's discussion of this risk.]	Section O.3.3.8.1, Delta Smelt, of Appendix O of the DEIS acknowledges the uncertainty in the relationship and cross-references the ROC LTO BO, and also discusses another Delta smelt predator (striped bass), wherein the discussion is provided in a manner similar to that suggested by the commenter.
18	90	[ATT1: Page O-301] [Referenced text: Overall, the modeling for Alternative 1 suggests that Longfin Smelt south Delta entrainment risk would be greater than under the No Action Alternative.] [Comment: This appears to over inflate the significance of this effect. Suggest clarifying what the significance of this effect is.]	Clarification of the significance of the potential effect is provided in the text of the EIS in Section O.3.3.8.2, Longfin Smelt, immediately following the passage referenced by the commenter, wherein it is noted that entrainment is likely to be limited under Alternative 1 even with a potential increase relative to the No Action Alternative. No change was made to the EIS.
18	91	[ATT1: Page O-326] [Referenced text: Potential changes to aquatic resources from San Joaquin Basin Steelhead Telemetry Study] [Comment: No text is provided under this heading]	There is no analysis for this section of the appendix. The header was included for consistency with all sections but has been removed to not cause confusion for the reader.
18	92	[ATT1: Page O-326] [Referenced text: Potential changes to aquatic resources due to reintroduction changes from Fish Conservation and Culture Laboratory] [Comment: No text is provided under this heading]	There is no analysis for this section of the appendix. The header was included for consistency with all sections but has been removed to not cause confusion for the reader.
18	93	[ATT1: Page O-333] [Referenced text: Potential changes to aquatic resources due to water transfers] [Comment: No text is provided under this heading]	There is no analysis for this section of the appendix. The header was included for consistency with all sections but has been removed to not cause confusion for the reader.

Ltr#	Cmt#	Comment	Response
18	94	[ATT1: Page O-333] [Referenced text: Potential changes to aquatic resources from Clifton Court aquatic weed removal] [Comment: No text is provided under this heading]	There is no analysis for this section of the appendix. The header was included for consistency with all sections but has been removed to not cause confusion for the reader.
18	95	[ATT1: Page O-335] [Referenced text: Section O.3.3.8.8 Central Valley steelhead-routing] [Comment: It should be acknowledged that studies being used to inform analysis of steelhead are based on fall-run and late-fall run hatchery fish. Studies include: Perry et al. 2015; Cavallo et al. 2015; Steel et al. 2012; there is uncertainty regarding the applicability of those results to steelhead. Suggest clarification regarding the conclusions of those studies be added to the DEIS]	The EIS was updated per the commenter’s suggestion.
18	96	[ATT1: Page Page R-80 R.2.7 Mitigation Measures AG-1: Diversify water portfolios] [Referenced text: This mitigation measure encourages water agencies to diversify their water portfolios. Diversification could include the sustainable conjunctive use of groundwater and surface water, water transfers, water conservation and efficiency upgrades, and increased use of recycled water where available.] [Comment: Reclamation cannot propose or commit to mitigation measures absent the authority or expectation of resources to ensure that the mitigation is performed. Suggest that Reclamation reformulate this mitigation measure to conform to Reclamation’s authority. For example, if Reclamation is proposing that it provide funding or assistance to water districts/agencies to diversify their water portfolios that is a proper mitigation measure, as it commits Reclamation to doing something within its realm of authority. In contrast, Reclamation lacks the authority to force water agencies to diversify their own water portfolios of their own free will.]	The commenter notes that Reclamation does not have authority to implement the proposed mitigation measures. This is accurate. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives. As stated in CEQ Forty Questions No. 19(b), “All relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies, and thus would not be committed as part of the RODs of these agencies. Sections 1502.16(h), 1505.2(c).” The text of the appendix was revised to include the following language: Both of the mitigation measures below rely on entities other than Reclamation to implement the measures. Because Reclamation does not have authority to implement these measures, Reclamation cannot ensure that they will be implemented. If they are implemented, they will reduce impacts on agricultural land.
18	97	[ATT1: Page Page R-80 R.2.7 Mitigation Measures AG-2: Impose Conditions on discretionary land use approvals] [Referenced text: This mitigation measure encourages agencies that approve changes in land use that involve conversion of agricultural land to nonagricultural use to impose conditions on such approvals and could include the following methods. Provide for a new conservation easement through grant or purchase to protect agricultural land that is not protected at the time of approval.	Please see response to 18-96.

Ltr#	Cmt#	Comment	Response
		Pay in-lieu fees sufficient to purchase easement or land into a fund specified for such purposes.] [Comment: Reclamation cannot propose or commit to mitigation measures absent the authority or expectation of resources to ensure that the mitigation is performed. Suggest that Reclamation remove this as a “mitigation measure” if it is not committing Reclamation to an action that is within its own jurisdiction and authority. Reclamation lacks the authority to control what these third party agencies do. If, however, Reclamation intended to commit itself to some sort of action to encourage or assist third party agencies in doing this, then suggest Reclamation reformulate this mitigation measure accordingly.]	
18	98	[ATT1: Page Pages R-81 to R-83 Table R.2-8 Summary of Impacts] [Referenced text: The Magnitude and Direction of Impacts associated with the identified Alternatives have MM-AG-1 and MM-AG-2 listed as Potential Mitigation Measures for consideration.] [Comment: MM-AG-1 and MM-AG-2 would not mitigate these identified impacts because Reclamation has insufficient legal authority, or the availability of sufficient resources to perform or ensure the performance of the identified mitigation actions.]	The commenter notes that Reclamation does not have authority to implement the proposed mitigation measures. This is accurate. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives. Please see response to 18-96. A table note was added to Table R.2-28 of the appendix to include the following language: Proposed mitigation measures MM AG-1 and MM AG-2, if implemented, would be implemented by an entity other than Reclamation. Therefore, it is not possible to ensure that these measures would be implemented. However, if they are implemented, they will reduce impacts on agricultural land.
18	99	[ATT1: Page Page R-87 R.2.9 Cumulative Effects] [Referenced text: Text states that collectively, the cumulative projects and Alternatives 1, 3, and 4 could potentially adversely affect agriculture by increasing water flows for fish or acquiring agricultural land for habitat restoration, simultaneously decreasing water availability for agriculture, resulting in a cumulative impact. Mitigation Measure AG-1 could reduce effects by encouraging water agencies to diversify their water portfolios, thus increasing likelihood that water users would have adequate water. Measure AG-2 would encourage agencies with discretionary land use approval powers to require land or conservation easement grants or payment of in-lieu fees to mitigate conversion of agricultural land to nonagricultural use, thus increasing protection on remaining agricultural land with the intention of minimizing future conversion. However, despite mitigation, the alternatives’ contribution to this cumulative impact would be substantial.]	The commenter notes that Reclamation does not have authority to implement the proposed mitigation measures. This is accurate. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives. Please see response to 18-96. A footnote was added to Section R.2.9 to include the following language: As noted above in Section R.2.7, Reclamation does not have authority to implement the proposed mitigation measures MM AG-1 and MM AG-2. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives.

Ltr#	Cmt#	Comment	Response
		[Comment: As stated previously, Reclamation cannot propose or commit to mitigation measures absent the authority or expectation of resources to ensure that the mitigation is performed. Suggest that Reclamation remove or reformulate Mitigation Measures AG-1 and AG-2 to something that Reclamation has the authority to perform.]	
18	100	[ATT1: Page Page E-63 E.12 Land Use and Agricultural Resources] [Referenced text: Mitigation Measure AG-1: Diversify water portfolios and Mitigation Measure AG-2: Impose conditions on discretionary land use approvals] [Comment: As stated previously, Reclamation cannot propose or commit to mitigation measures absent the authority or expectation of resources to ensure that the mitigation is performed. Suggest that Reclamation remove or reformulate Mitigation Measures AG-1 and AG-2 to something that Reclamation has the authority to perform.]	The commenter notes that Reclamation does not have authority to implement the proposed mitigation measures. This is accurate. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives. Please see response to 18-96. A footnote was added to Section 5.12 in two locations to include the following language: As discussed in Appendix R, Reclamation does not have authority to implement the proposed mitigation measures MM AG-1 and MM AG-2. However, both proposed measures represent common agency actions. If the mitigation measures are implemented, they will reduce impacts on agricultural land as a result of the proposed alternatives.
18	101	[ATT1: Page G-12] [Referenced text: However, more recent research shows certain diatom and chlorophyte species grew significantly faster with NH4compared with NO3 (Berg et al. 2017). This suggests differences in growth rates among species may have a greater role in phytoplankton species composition than variations in N sources (Berg et al. 2017).] [Comment: The Berg et al. 2017 findings are not necessarily inconsistent with the prior statement that different algal species have different nutrient preferences. Suggest revising statement to, "However, More recent research shows certain diatom and chlorophyte species grew significantly faster with NH4 compared with NO3 (Berg et al. 2017). This suggests differences in growth rates among species may have a greater may also play a role in phytoplankton species composition than variations in N sources (Berg et al. 2017)."]	For clarity, the sentences referenced in this comment has been revised to state: "More recent research shows certain diatom and chlorophyte species grew significantly faster with NH4 compared with NO3 (Berg et al. 2017). This suggests differences in growth rates among phytoplankton species may determine competitive outcomes more so than variations in N sources."
18	102	[ATT1: Page G-91 [Referenced text: Bay-Delta: Potential Changes in EC] [Comment: In this section the analysis indicates that EC would be higher under Alternative 1 in certain areas in September-December of wet and above normal years. It should be noted at the start of this section that no Summer-Fall Action	A discussion regarding how EC levels under Alternative 1 would be different from those presented in modeling results due the implementation of a summer-fall Delta Smelt habitat action is provided in the first paragraph on page G-92 of the DEIS Appendix G.

Ltr#	Cmt#	Comment	Response
		was included in the modeling and how the EC results would be different had the Summer- Fall Action been modeled.]	
18	103	[ATT1: Page I-29] [Referenced text: Groundwater provides approximately 40 to 50% of total water supply in Santa Clara County in average water year conditions (SCVWD 2010).] [Comment: This sentence confuses water supply and water use. Replace “water supply” with “water use”]	Given the manner that SCVWD characterizes groundwater use in their document, the text was revised to read “water use” instead of “water supply.”
18	104	[ATT1: Page I-30] [Referenced text: Groundwater provides over 95 percent of the total water supply in Llagas Subbasin.] [Comment: This sentence confuses water supply and water use. Replace “water supply” with “water used”]	Given the manner that SCVWD characterizes groundwater use in their document, the text was revised to read “water use” instead of “water supply.”
18	105	[ATT1: Page I-33] [Referenced text: Groundwater provides over 95% of the total water supply in Llagas Subbasin.] [Comment: This sentence confuses water supply and water use. Replace “water supply” with “water used”]	Given the manner that SCVWD characterizes groundwater use in their document, the text was revised to read “water use” instead of “water supply.”
18	106	[ATT2:] Exhibit2: Appendix A Comparison of Predicted Longfin Smelt Fall Midwater Trawl Index for Historical and Hypothetical Delta Outflow Scenarios Using the Nobriga and Rosenfield (2016) Population Dynamics Model	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
18	107	[ATT1: Page G-92] [Referenced text: Bay-Delta: Potential Changes in Chloride] [Comment: In this section the analysis indicates that EC would be higher under Alternative 1 in certain areas in September-December of wet and above normal years. It should be noted at the start of this section that no Summer-Fall Action was included in the modeling and how the EC results would be different had the Summer- Fall Action been modeled.]	A discussion regarding how chloride levels under Alternative 1 would be different from those presented in modeling results due the implementation of a summer-fall Delta Smelt habitat action is provided in the final full paragraph on page G-93 of the DEIS Appendix G.
18	108	[ATT1: Page G-94] [Referenced text: Bay-Delta: Potential Changes in Bromide] [Comment: In this section the analysis indicates that EC would be higher under Alternative 1 in certain areas in September-December of wet and above normal	A discussion regarding how bromide levels under Alternative 1 would be different from those presented in modeling results due the implementation of a summer-fall Delta Smelt habitat action is provided in the fourth paragraph on page G-95 of the DEIS Appendix G.

Ltr#	Cmt#	Comment	Response
		years. It should be noted at the start of this section that no Summer-Fall Action was included in the modeling and how the EC results would be different had the Summer- Fall Action been modeled.]	

Ltr#	Cmt#	Comment	Response
19	1	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because the proposed project would cause significant adverse water quality impacts in the Sacramento-San Joaquin Delta, the water supply for more than 23 million people. The increases in salinity are well in excess of the widely-accepted 5% significance criteria for Bay-Delta projects. See, e.g., the dramatic increases in salinity at Contra Costa Water District's (CCWD) Old River at Highway 4 intake in the fall months (Figure 17-1 et seq. from Appendix F [Exhibit 1, herein]).	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. The modeled changes in water quality conditions and compliance for each of the alternatives are detailed in the EIS.
19	2	[Exhibit 1: Figure 17-1. Old River at Highway 4, Long-Term Average EC]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
19	3	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because the DEIS offers no mitigation for these significant adverse water quality impacts [i.e. Delta salinity] in the fall months, even though some mitigation is offered for water quality impacts caused by project construction and impacts as a result of habitat restoration (page 5-10, page 5-32).	Please see response to comment 19-1.
19	4	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because the proposed project is long-term coordinated operation of the federal CVP and the state SWP, but the significant adverse water quality impacts of the project are in violation of state regulations, and the state water rights under which both the SWP and CVP operate.	Please see response to comment 19-1.
19	5	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because there is no corresponding California Environmental Quality Act (CEQA) analysis and Draft Environmental Impact Report (DEIR) disclosing the impacts from the SWP and State of California's perspectives.	Please see Master Response 1, Responses to General Comments, for information regarding the regulatory process for the SWP Reinitiation of Consultation on Long-term operations.
19	6	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because the DEIS proposes significantly reducing the protections offered by the current Fall X2 limits. It appears that the significant relaxation of the existing Fall X2 limits (e.g., allowing X2 = 80 km in wet years instead of	Please see response to comment 19-1.

Ltr#	Cmt#	Comment	Response
		74 km) have been developed without any input from other major stakeholders and the general public.	
19	7	This Draft EIS is inadequate under the National Environmental Policy Act (NEPA) because the DEIS does not include any actual modeling of the proposed project so the adverse environmental impacts of the proposed project have not been analyzed, disclosed or avoided.	CALSIM II modeling was conducted for the each of the proposed project and alternatives. The results of this modeling effort is provided in EIS Section 5.3 Surface Water Supply with additional supporting detail provided in EIS Appendix H Water Supply Technical Appendix, Section H.2 Alternatives. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, for additional discussion regarding the hydrologic modeling effort. Please also see Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of the analysis contained in the EIS.
19	8	The federal project proponent may attempt to argue whether there are requirements under NEPA regarding implementing mitigation measures to offset all the significant adverse water quality impacts and other environmental impacts. However, the proposed project involves coordinated long-term operation of CVP and SWP, and the SWP cannot operate in violation of State of California laws. At a minimum, the joint impacts of the SWP must be fully disclosed and mitigated. Any analysis of coordinated CVP and SWP operations that violate California water rights regulations is inadequate for disclosing the actual future joint operations of these two water projects.	NEPA only requires that an EIS identify and discuss reasonable mitigation. NEPA does not require Federal agencies to adopt or fund mitigation. Reclamation is not subject to the California Environmental Quality Act. A separate California Environmental Quality Act document is being prepared by the California Department of Water Resources which will cover operations by the state and compliance with State of California laws.
19	9	The July 2019 DEIS is incomplete. The modeling of actual project operations, such as the proposed Suisun Marsh Salinity Control Gates (SMSCG) operations, have not been completed so the modeling of Alternative 1 is not representative of the environmental impacts of the proposed coordinated long-term operations.	Modeled results represent a book-end. Benefits or impacts from Alternative 1 would be somewhere between Alterative 1 results and the No Action Alternative. Please see Master Response 7, Aquatic Resources for a discussion on summer and fall habitat modeling and Delta smelt summer-fall habitat operations. Additional modeling has been performed and is provided in Appendix F, Attachment 1, which includes SMSCG flows.
19	10	The July 2019 DEIS is incomplete. No necessary corresponding CEQA analysis and Draft EIR has been provided by the California Department of Water Resources (DWR.)	Please see response to comment 19-5.
19	11	The July 2019 DEIS is incomplete. The DEIS assumes dramatic relaxations of existing Fall X2 limits, changes to current Old and Middle River (OMR) restrictions, and other current limits on Delta operations, without new biological opinions from the key federal and state fishery agencies.	Please see Master Response 2, Related Regulatory Processes regarding Section 7 consultation. Please see Master Response 4, Alternatives Formulation, for a discussion of the refinements made to Alternative 1 since the release of the Draft EIS in response to agency and public input.
19	12	All these major inadequacies of the DEIS [i.e. incomplete modeling, lack of CEQA analysis, lack of new BiOps] must be corrected and a new joint Draft EIS/EIR released for public review and comment.	Please see response to comment 19-5.

Ltr#	Cmt#	Comment	Response
20	1	NDWA has a statutory mandate under California law to assure that the lands within the North Delta have a dependable supply of water of suitable quality sufficient to meet present and future beneficial uses. [Footnote 1: North Delta Water Agency Act, Chapter 283, California Statutes of 1973.] In accordance with its statutory responsibilities, in 1981 the NDWA and the Department of Water Resources (DWR/Department) executed the Contract for the Assurance of a Dependable Water Supply of Suitable Quality (1981 Contract). The crux of the 1981 Contract, which remains in full force and effect, is a guarantee by the State of California that, on an ongoing basis, DWR will ensure through the operation of the State Water Project that suitable water will be available to satisfy all agricultural and other reasonable and beneficial uses in all channels within NDWA's boundaries. The 1981 Contract contains specific minimum water quality criteria to be maintained year-round and obligates DWR to avoid or repair damages from hydrodynamic changes resulting from the operation of the State Water Project (SWP). During "Phase IV" of the water right hearings that led up to Water Right Decision No. 1641 revised, DWR acknowledged its flow responsibilities by means of a Memorandum of Understanding with NDWA dated May 26, 1998. Taken together, the 1981 Contract and the 1998 Memorandum of Understanding constitute a broad commitment by DWR to operate the SWP to provide a water supply of suitable quality and quantity within the jurisdictional boundaries of NDWA. DWR's compliance with the binding terms of the 1981 Contract is not discretionary. Therefore, while CEQA requires DWR to implement feasible mitigation measures to reduce significant impacts of projects to less-than-significant levels, DWR may not, as a matter of contract law, choose not to comply with the specific requirements of the 1981 Contract based on a determination of infeasibility, or otherwise. Under the 1981 Contract, the State is prohibited from conveying SWP water so as to cause decrease in natural flow, increase in natural flow, reversal of natural flow direction, or alteration of water surface elevations in Delta channels to the detriment of Delta channels or water users within the Agency. The State is also required to either repair or alleviate damage, improve the channels as necessary, or provide diversion facility modifications required for any seepage or erosion damage to lands, levees, embankments, or revetments adjacent to Delta channels within Agency associated with conveyance of SWP water	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. For all action alternatives, the DEIS explains that DWR operates the SWP to deliver water 29 water agencies throughout the state of California and operates the SWP in accordance with contracts with senior water right holders in the Feather River Service Area. Further, DWR must operate the SWP consistent with applicable state and Federal laws, including the California Environmental Quality Act. A separate California Environmental Quality Act document is being prepared by the California Department of Water Resources which will cover operations by the state and compliance with State of California laws.

Ltr#	Cmt#	Comment	Response
		supply. Under California law, the operation of CVP and SWP must also ensure protection of area-of-origin water rights. [Footnote 2: County of Origin Law of 1931 (Wat. Code, §§ 10500-10506), the Watershed Protection Statute of 1933 (Wat. Code, §§ 11460-11465), and the Delta Protection Act of 1959 (Wat. Code, §§ 12200-12205) (collectively the "Area of Origin Laws") enacted by the State Legislature to clarify the priority of areas of origin and help preserve water quality in the Delta.]	
20	2	Impacts of Proposed Project. The CVP and SWP are operated in accordance with the Coordinated Operation Agreement between the federal government and the State of California, amended on December 12, 2018 to continue the operation of the Central Valley Project (CVP) in a "coordinated manner with the SWP" in a manner that enables the Bureau and the California Department of Water Resources (DWR) to "maximize water deliveries" consistent with "applicable laws, contractual obligations, and agreements." (emphasis added). In addition to the protection of fish, the Proposed Project must ensure the protection of other beneficial uses in the Delta, including water quality and availability for agriculture, municipal, and industrial water supply. NDWA is concerned that recent modifications to SWP/CVP Coordinated Operations Agreement (COA) in order to maximize CVP water deliveries and shift greater reliance on releases from Oroville Reservoir to meet Delta Water Quality Control Plan objectives (D-1641) between May 1 and August 15 will alter water quality, water surface elevations, and velocities in the North Delta to the detriments of water users. Such impacts must be fully analyzed and mitigated in the Final EIS.	The water quality assessment in the Draft EIS, Chapter 3, Alternatives, and Appendix G, Water Quality Technical Appendix, focuses on Bay-Delta Water Quality Control Plan (D-1641) compliance locations, where the greatest potential for the alternatives to affect water quality would occur. Appendix F, Attachment 3-6 does present modeling results for electrical conductivity (EC) for three north Delta locations: Sacramento River at Steamboat Slough, Cache Slough at Ryer Island, and Sacramento River downstream of Georgiana Slough. The modeling results show that that alternatives would have little to no effect on monthly average EC at these locations, with differences between the alternatives and the No Action Alternative being zero to +/- 2 umhos/cm. DEIS Appendix F provides modeled forecasts of changes in river flow and Delta outflow rates for the No Action Alternative and the action alternatives. These flow results provide an indication of the anticipated magnitude of any shifts in the related water surface elevations across the Delta. In addition, please also refer to Master Response 5, Adequacy of Analysis and Mitigation for additional information on the adequacy or the analysis in the DEIS.
20	3	None of the four alternatives in the Draft EIS describe operating the CVP and SWP in accordance with contractual obligations of DWR. Therefore, the Project Description and Preferred Alternative should be revised to ensure that the long-term CVP and SWP operations to maximize water deliveries, including water transfers and recent COA Addendum changes, ensures DWR's ability to fully comply with the water quality and availability terms and conditions of the 1981 Contract.	Please see response to comment 20-1
20	4	The final Preferred Alternative and Project Description should include: a) a comprehensive description of the 1981 Contract; b) identify the 1981 Contract as a significant legal constraint on the long-term coordinated operation of the SWP with the CVP; and c) identify how proposed long-term coordinated	Reclamation follows all applicable state and Federal laws and operates in accordance with applicable contracts.

Ltr#	Cmt#	Comment	Response
		operations will assure water supply reliability, availability, and quality for all North Delta water users, including compliance with the water quality criteria contained in the 1981 Contract.	
20	5	Section 3.3.5.3 (Delta Water Diversions) of the Draft EIS fails to mention the thousands of individual diversion intakes, primarily agricultural siphons, located in the north Delta. The Final EIS must analyze and mitigate any adverse impacts to surface water elevations and water quality where these diversions are located.	The DEIS provides analysis of Delta water quality within Section 5.2, Water Quality, supported by salinity modeling results for seventeen locations throughout the Delta, including locations used to assess compliance with Bay-Delta Water Quality Control Plan electrical conductivity objectives for protection of agricultural beneficial uses presented in Appendix F, and detailed analysis of the modeling results presented in Appendix G. The DEIS also presents in Appendix F, modeled forecasts of changes in river flow and Delta outflow rates for the No Action Alternative and the action alternatives. These flow results provide an indication of the anticipated magnitude of any shifts in the related water surface elevations across the Delta. Please also refer to Master Response 5, Adequacy of Analysis and Mitigation, for additional response regarding adequacy of the analysis in the DEIS. Please also see response to comment 20-2.
20	6	The Draft EIS fails to analyze whether the flows necessary for DWR to comply with obligations under the 1981 Contract will be assured in long-term coordinated operations of the CVP with the SWP. The salinity criteria in the 1981 Contract is separate and distinct from D-1641 standards and is year-round; therefore, this water quality criteria should be included as an objective in the final Preferred Alternative selected for the Record of Decision.	Please see response to comment 20-1
20	7	All hydrologic and hydraulic modeling undertaken to analyze the alternatives must assume, as the "baseline" condition, that the terms and conditions of the 1981 Contract, including but not limited to its water quality requirements in the fall and winter months (August 16 through April 30), will remain in full force and effect.	Please see response to comment 20-4. Reclamation follows all applicable state and Federal laws and operates in accordance with applicable contracts. The No Action Alternative is consistent with baseline conditions. Additional information is provided in Master Response 3, Baseline and No Action. Please see Appendix F, Modeling for a description of the modeling assumptions used in the analysis.
20	8	The Final EIS should not only analyze and mitigate the potential impacts to water quality, water surface elevations, flows and flow direction, increased seepage and erosion resulting from implementing a Preferred Alternative in the north Delta, but also incorporate the mitigations associated with the repair, modification, or replacement of existing landowner diversion facilities and levees as required under Article 6 of the 1981 Contract due to the modification of coordinated operations of SWP with the CVP.	Please see response to comment 20-1
20	9	The Draft EIS failed to analyze the extent to which any of the project alternatives will cause agricultural land within NDWA to be taken out of	Table Q3-1 in Appendix Q, Attachment 3 shows major surface water users in each region modeled by SWAP. While the NDWA is not explicitly listed in

Ltr#	Cmt#	Comment	Response
		agricultural production. Under NEPA these economic impacts need to be analyzed and mitigated in the Final EIS.	Table Q3-1, the farmland within the NDWA is included as "direct diverters within the Delta region." The water rights within the NDWA boundaries and 1981 contract are represented in the water resources modelling and furthermore, the agricultural land is analyzed in the SWAP model. No changes to the Draft EIS are required.

Ltr#	Cmt#	Comment	Response
21	1	We have reviewed Reclamation's DEIS and have one major concern. Specifically, while the Reclamation's analyses of impacts on surface water (including, especially, deliveries to South-of-Delta CVP contractors), on groundwater, agricultural, and regional economics appear to show the notable superiority of Alternative 3 to Alternative 1 in each of these areas, Alternative 1 and not Alternative 3 is Reclamation's current "preferred action." As simple illustrations of this, for example, Alternative 3 increases surface water deliveries to South-of- Delta CVP Ag and SWP Ag contractors in the Tulare Lake Region by an average of 154 and an average of 186 thousand acre-feet, respectively, while the increase under Alternative 1 is just 108 and 36 thousand acre-feet, respectively [Footnote 2: Compare Tables H.2-5 and H.2-19, Appendix H, Water Supply Appendix, pp. H-21 and H-28, DEIS (Tulare Lake Region Contract Deliveries)]. Similarly, thanks to the increase in surface reliability, Central Valley groundwater reliance under Alternative 3 is reduced by an average of 513 thousand acre-feet per year; in contrast, under Alternative 1, the reduction is just 264 thousand acre-feet. [Footnote 3: See Table I.1-2, Appendix I, Groundwater Technical Appendix, pp. I-74 and I-75, DEIS (Change in Central Valley Hydrologic Model Simulated Groundwater Pumping)]. In terms of agricultural impacts, Dry- and Critical Dry-Year irrigated agricultural farmland acreages in the San Joaquin Valley under Alternative 3 is estimated to increase by 56,039 acres, while under Alternative 1 the increase is only 23,668 acres.4 Similarly, the regional economics analysis, which includes such metrics as jobs, economic output, and labor income, significantly out-performs Alternative 1. [Footnote 5: Compare Tables Q.2-14, Q.2-14 and Q.2-16 and Tables Q.2-46, Q.2-47 and Q.2-48, Appendix Q, pp. Q-29 and Q- 55, DEIS (San Joaquin River Region Agricultural Water Supply Costs and Agricultural Water Supply-Related Regional Economic Effects under Average and Dry Conditions)]. The relative increase in surface reliability under Alternative 3 as compared to Alternative 1 translates, generally, into markedly improved outcomes in the SGMA)-impacted export areas of the State, whereas	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Reclamation recognizes the significant differences between the alternatives analyzed in the EIS, and the improved performance for surface water, groundwater, agricultural, and regional economics under Alternative 2 and 3 as compared to the No Action Alternative or the other Action Alternatives. However, as you point out later in your comment letter, Alternative 3 does not result in improvements across all resource areas. For example, changes in Sacramento River flows would improve water temperatures for salmonids under Alternative 1 and 4, whereas Alternatives 2 and 3 would have the opposite effect. No decision has yet been made on the selected alternative, and this decision will not come until the Record of Decision. Any decision will consider Reclamation's purpose and need, which is to maximize water deliveries, optimize marketable power generation, and increase operational flexibility by addressing the status of listed species. Please see Master Response 1, Responses to General Comments, for a brief discussion regarding SGMA.

Ltr#	Cmt#	Comment	Response
		the differences between the Reclamation's "preferred" alternative, Alternative 1, and the No Action alternative, is quite modest.	
21	2	Balancing Project Objectives and Impacts on the Quality of the Human Environmental Against Manageable Variables to Achieve Acceptable Biological Outcomes In contrast to the favorable comparisons with respect to surface water reliability, reduced groundwater reliance, agricultural impacts, and regional economics, Reclamation's analyses of potential impacts on protected fish and in-Delta water quality points to some potential impairment of conditions, under certain circumstances, in the comparison of Alternative 3 to the Reclamation's preferred alternative, Alternative 1 and the No Action Alternative [Footnote 6: See, e.g., DEIS, pp. 1-4 and 1-5 ("Major Conclusions," "Analysis and Overview," "Aquatic Resources"]. At the same time, however, it appears that these impairments are possibly only minor comparative deviations. Moreover, there is no clear means to readily contrast or gauge the relative significance of these possibly minor differences among the different alternatives. In contrast to water supply and economic impacts to ensure the quality of the human environment, possible water quality and species impacts have, not only the controls described in Reclamation's alternatives (including Alternative 3), but also the hard backstopping of existing regulatory water quality standards and eventual terms of the impending biological opinions. Furthermore, while the actual differences between the existing operational baseline and proposed operations under Alternative 1 and 3 are quite minor, they are also offset by proposed new habitat and intervention and management features. In contrast, the water supply and economic impacts differences between Alternatives 1 and 3 are considerable, offering no similar flexibility	As described in the EIS Chapter 5, Section 5.1.2, Environmental Consequences, "The impact analysis includes quantitative and qualitative analyses depending upon availability of acceptable numerical analytical tools and available information." A primarily qualitative fisheries analysis was performed, and quantitative water supply, groundwater, and economic analyses were performed. Given the monthly and comparative nature of the operations modeling performed, the myriad of other factors that are not quantifiable that affect fisheries populations (such as invasive species and contaminants), and the lack of quantitative models with mechanisms that are sensitive to various elements of the alternatives (such as predator hot spot removal), a qualitative analysis is an appropriate analytical method for fisheries analysis in this document. As the commenter mentions, Alternative 1 and 3 include habitat restoration and other non-flow actions to address species concerns. These substantial non-flow actions particularly are aimed at helping to improve juvenile survival. However, operations that affect egg survival have the potential to limit the population size before the beneficial effects of habitat restoration can be obtained at the next life stage, reducing genetic and life-history diversity. Reclamation has included alternatives (Alternatives 1, 4) which include flow actions, which affect temperature, dissolved oxygen, as well as stranding, and are mechanisms affecting egg survival in accordance with the SAIL conceptual model (Windell et al, 2017). Existing water right requirements such as SWRCB Water Rights Decision 1641 (D-1641) and Water Rights Order 90-5 do contain requirements for fish and wildlife beneficial uses, and these are incorporated into the operations described in Alternatives 1 through 3. Starting in 1993, with the first Winter-run Chinook Salmon Biological Opinion, Reclamation has had additional requirements for complying with the Endangered Species Act in addition to water right requirements for fish and wildlife. Please refer to Master Response 1, Responses to General Comments, other regulatory process, level of analysis included in the EIS, and water rights. See Master Response 2, Related Regulatory Processes, for discussion of the ESA permitting process and 2008/2009 Biological Assessments and Biological Opinions. Please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding impact conclusions and sufficiency of analyses included in the EIS, including use of best available science and requests by commenters for additional detail.

Ltr#	Cmt#	Comment	Response
21	3	While Reclamation's groundwater analyses assume undelivered surface water would be replaced 1:1 with groundwater, under the Sustainable Groundwater Management Act ("SGMA"), the reality is that such 1:1 replacement in areas with historic overdraft will ultimately not be possible. Accordingly, the agricultural lands analysis' projections of increased acreages may mask a probable reduction in acreage due to the loss of access to groundwater. In any case, for comparative purposes in contrasting Alternatives 1 and 3, the relative difference in farmland acreages is sufficient to demonstrate the general point that Alternative 3 would support a larger acreage of irrigated acreage than Alternative 1.	Please see Master Response 1, Responses to General Comments, for a brief discussion regarding SGMA. The discussion for each alternative under Effects Modeled by SWAP acknowledges that SWAP modeling does not account for changes in groundwater use under SMGA implementation. The EIS states that because under Alternatives 1, 2, and 3, instream-flows are expected to increase, the additional surface water supply is expected to reduce the reliance of those areas on groundwater. Alternative 4 is the only alternative that would see a reduction in crop acreage and agricultural productivity under Alternative 1. The EIS acknowledges that because sufficient groundwater might not be available in the future to replace reduced CVP/SWP supplies, it is possible that SWAP acreage and production value decreases under Alternative 4 could be greater than modeled under SWAP. While it is true that under SMGA less groundwater is anticipated to be available for beneficial uses than under current circumstances, effects of implementing SGMA are not effects of Alternative 1. No change to the EIS is needed. The commenter noted that SWAP projects a greater increase in agricultural acreage and productivity under Alternative 3 than under Alternative 1. This conclusion is correct. The EIS does not make any comparative statements between alternatives in the Summary of Impacts discussion, but instead only provides an analysis of anticipated effects. No change to the EIS is needed.
21	4	Changing the Current 'Zero Sum' Proposition Potentially challenging the apparent 'zero sum' calculus of an approach that considers flows and pumping alone several opportunities—and the potential for improved outcomes—appear to emerge from the EIS's discussion of "Areas of Controversy." [Footnote 7: For example, it would appear that there is significant uncertainty and room for considerable flexibility in the description of proposed real-time management "operations" improvements as well as proposed new "habitat restoration," "facility improvements," and "fish intervention" measures. (See, e.g., Table 3.6-1. Components of Alternative 3, DEIS, p. 3-46.) Similarly, operations and species management efforts under new biological opinions will benefit from unprecedented new investments in science, monitoring, and interagency coordination (for example, the existing CAMT process and dedicated funding for a new science program under proposed Bay-Delta "voluntary agreements").] On one hand, the water and human cost of the No Action alternative and Alternative 1, compared to Alternative 3, is inflexible and quite great. This is especially true in light of the	As your comment implies, collaborative working relationships and honest, open-minded and tough discussions amongst all parties can lead to more adequately balancing beneficial uses, improving allocations for water users at a time of decreasing operational flexibility.Through the WIIN Act, Reclamation engaged with water users to incorporate their perspectives as well as engaging in an extensive public participation process pursuant to NEPA. The final decision will consider Reclamation's purpose and need, which is to maximize water deliveries, optimize marketable power generation, and increase operational flexibility by addressing the status of listed species.

Ltr#	Cmt#	Comment	Response
		'zero allocation' years of California's recent drought, and impending implementation of SGMA. By contrast, manageable biological differences between the same alternatives are comparatively minor. As a policy choice, therefore, this suggests that revamped and optimized Alternatives 1 and 3 in Reclamation's Final EIS should seek a middle path on water supply and economics; mixing, matching and reopening the two alternatives that arrives at a viable suite of improved biological, water quality, water supply and economic outcomes.	
21	5	It is our [California Farm Bureau Federation] belief that the existing approach has worked poorly, both for people and for fish. In a rapidly changing post-SGMA world, it is also clear that a mere 9-10% increase in agricultural deliveries for the "long-term coordinated operations" of the CVP and SWP under currently proposed Alternative 1 is quite insufficient. Important in all of this, therefore, we must not lose sight of the fact that Reclamation, the National Marine Fisheries Service, the United States Fish and Wildlife Service ("Services"), and water users indeed can try something different for the sake of all of the important values involved. It is in this sense and with this intent that Farm Bureau urges the Bureau and the Department of Interior ("DOI" to consider abandoning Alternative 1 as its preferred alternative and instead adopting either Alternative 3 with appropriate mitigation, or a potential new hybrid alternative that adaptively balances and adopts the best features of Alternative 1 and Alternative 3.	Please see the response to Comment 21-4. Please also see Master Response 1, Responses to General Comments, regarding SGMA.
21	6	Failure to Consideration Expanded Conjunctive Use and Groundwater Recharge Opportunities as Foreseeable Scenarios in a Post-SGMA World We [California Farm Bureau of Federation] find the boundaries of Reclamation's proposed operations and exploration of alternatives somewhat inadequate as it relates to an integrated perspective on groundwater, a critical component of California's, and the San Joaquin Valley's, water equation. Long-term implementation of SGMA makes this aspect particularly important—but, again, the current scope and focus of the DEIS seems to leave important opportunities unrealized. Specifically, the DEIS analyses focus primarily on surface water operations and deliveries as well as project operations and deliveries. In a more integrated view, aggressive conjunctive use and surface water management with an express eye to groundwater management holds many possibilities. As you know, there are significant differences between different water types in California hydrology and even more markedly so in the San Joaquin River and	Reclamation agrees that there are a lot of potential opportunities to explore in this area for broader California water management. The Sustainable Groundwater Management Act requires groundwater sustainability agencies to have sustainable management of their aquifers by 2040 for critically over-drafted basins, or 2042 for other basins. Integrated management and coordination seems like a key tool that will enable success while minimizing impacts to the agricultural sector of the economy and associated rural jobs in disadvantaged communities. DWR has been exploring flood-managed aquifer recharge, and has some information available at the link: https://water.ca.gov/Programs/All-Programs/Flood-MAR (DWR 2019).

Ltr#	Cmt#	Comment	Response
		Tulare Basins. Such extremes year-to-year frame two extremes of a water management pendulum: In years of abundance, ample runoff is theoretically available for capture and storage, both above and below ground, while, in times of dearth, supplemental and replacement supply from groundwater is essential. Many of the San Joaquin Valley's aquifers, in particular, show strains of historic overdraft. It is against this backdrop that dozens upon dozens of newly formed "groundwater water sustainability agencies", including many outlying "white areas", scramble to comply with SGMA. Despite this, alternatives in the DEIS contemplate no fundamental change in flood operations, nor is expanded groundwater banking or trading discussed, nor do the alternatives consider opportunities for coordinated integration with other non-project facilities, including local non-project operations and Corps facilities. The result is a set of proposed operational options that would seem to neglect the opportunities associated with a more robust flood and managed aquifer recharge regime. Farm Bureau believes this is a key area where alternatives in the DEIS may miss major opportunities for combined fish and water supply benefits. In this regard as well, we therefore again request that Reclamation consider either a mitigated adoption of Alternative 3, or some further optimization and refinement of Alternatives 1 and 3 for advancement in the Final EIS.	
21	7	Cautionary Lessons of Alternative 4 as Additional Support for a Modified Alternative We [California Farm Bureau Federation] would like to provide comment on an important aspect of Reclamation's proposed Alternative 4. In addition to additional instream flows and tighter controls on reservoir options, Delta outflow, and operations of the pumps, the DEIS notes that Alternative 4 seeks, as nearly as possible, to emulate a flow regime equivalent to 55% "unimpaired flow." This feature of Alternative 4 is instructive and potentially important to inform reasonable policy choices to the extent it provides a rough analogue for the California State Water Resources Control Board ("SWRCB")'s proposed 30- to 50- and 45- to 65-percent "unimpaired flow" flow criteria standards for the San Joaquin and South Delta and the Sacramento and remaining Bay-Delta watersheds Consistent with independent analyses of the SWRCB's operationally similar proposed flow criteria, Alternative 4 performs quite poorly in relation to each of the remaining alternatives considered (including, especially, Alternative 3) with respect to surface water reliability, groundwater dependence, and regional agricultural impacts. [Footnote 8: Compare, for example, Alternative 4 versus	As stated in the EIS, "Alternative 4 would manage reservoir storage for the primary objective of preserving the coldwater pool. In addition to managing water temperatures, Alternative 4 would release additional instream flows in the Sacramento River and its tributaries to benefit fish but would balance this operation with the need to preserve the coldwater pool." This highlights the most important difference between Alternative 4 and the SWRCB's proposed unimpaired flow criteria. When increasing requirements for in-river flows are added, this has the effect of de-emphasizing storage, reducing abilities to store water in surface water reservoirs for dry seasons and reducing cold water pool for spawning salmonids. Therefore, Reclamation included Alternative 4 as a bookend with improved conditions for fish, added mechanisms into the modeling to ensure higher storage levels (and therefore improved cold water pool) than what would occur under an unimpaired inflow only alternative. This highlights the different and competing needs between listed species - unimpaired inflow might benefit juvenile and adult salmonid passage and increase rearing habitat, but it also reduces storage, which impacts cold water pool and therefore egg survival for salmonids. As this commenter mentions, the lower storage of Alternative 4 performs poorly for other uses of the CVP and

Ltr#	Cmt#	Comment	Response
		other Alternatives including Alternative 3 in Table I.2-2 (Change in Central Valley Hydrologic Model Simulated Groundwater Pumping) and Table 5.12-3 (Dry and Critically Dry Year Change in Irrigated Agricultural Farmland).] This is because, similar to the SWRCB's unimpaired flow criteria as compared to water user-proposed voluntary agreements now under consideration, Alternative 4 seeks a mere intensification of the same 'flow-centric' strategies and uncertain scientific hypotheses that have, at great human cost, failed to produce any satisfactory result. To the extent the SWRCB's flow criteria and proposed voluntary agreements remain very much in play, therefore, Farm Bureau encourages Reclamation to consider an optimized and reframed postulation of Alternatives 1 and 3, as two bookends in a flexible range of operations that can better balance and meet all the competing objectives of the projects.	SWP including agricultural, municipal, and industrial water supply, hydropower, and recreation. Rearing habitat can be constructed in lower floodplain benches, or through inundating existing features such as the Yolo Bypass, rather than created by inundating higher floodplain areas, saving water for use by agriculture, industry, and cities.

Ltr#	Cmt#	Comment	Response
22	1	The National Environmental Policy Act, 16 U.S.C. section 4321 ("NEPA") requires Reclamation to take a hard look at the impacts of its proposed actions. The Draft Environmental Impact Statement ("DEIS") prepared by Reclamation is woefully inadequate, for at least two reasons. First, Reclamation has reinitiated consultation with the National Marine Fisheries Service ("NMFS") and the United States Fish and Wildlife Service ("USFWS") to consider modifications to the coordinated operation of the CVP and State Water Project ("SWP"). Yet Reclamation fails to include USFWS' and NMFS' analysis and conclusions regarding the impacts of such modifications. Second, Reclamation fails to include a reasonable range of alternatives, and ignores Congressional mandates in doing so. Reclamation must prepare and recirculate a new DEIS that remedies the deficiencies discussed in more detail below.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for further information about when a supplemental EIS is necessary. Please see Master Response 2, Related Regulatory Processes, regarding the regulatory processes for NEPA and ESA, and the timing and coordination of review for NEPA documents and ESA studies. Please see Master Response 4, Alternatives Formulation, for a discussion about the range of reasonable alternatives analyzed for the Draft EIS.
22	2	THE DEIS MUST DISCLOSE ENVIRONMENTAL IMPACTS OF ANY REASONABLE AND PRUDENT ALTERNATIVE Reclamation relies upon its wholly inadequate Biological Assessment to set the range of potential alternatives and mitigation measures examined in the DEIS. By releasing the DEIS prior to and thus without the benefit of the consultation process, Reclamation has violated NEPA. Reclamation's DEIS must allow the public to examine and comment on the environmental impacts of implementing	Please see response to comment 22-1. The unsigned draft July 1, 2019 Biological Opinion referenced in this letter was not transmitted to Reclamation.

Ltr#	Cmt#	Comment	Response
		any modifications or mitigations that are proposed by USFWS and NMFS during the consultation process, and to suggest additional modifications and alternatives. San Luis & Delta-Mendota Water Authority v. Jewell, 747 F.3d 581, 645-655 (9th Cir. 2014) (Reclamation's adoption and implementation of the 2008 USFWS BiOp required the preparation of an EIS). Indeed, NMFS scientists concluded in July 2019 that the [Reinitiation of Consultation] on [Long-Term Operation] is: • likely to jeopardize the continued existence of Sacramento River winter-run Chinook salmon, [Central Valley ("CV")] spring-run Chinook salmon, [and California Central Valley ("CCV")] steelhead, and likely to destroy or adversely modify . . . their designated critical habitats; • likely to jeopardize the continued existence of Southern Resident killer whales; and • not likely to jeopardize the continued existence of the southern [distinct population segment] of North American green sturgeon, and not likely to destroy or adversely modify its designated critical habitat. Unsigned July 1, 2019 NMFS Biological Opinion for the Long-Term Operation of the CVP and SWP (as published by the Sacramento Bee), pp. 940-941. For that reason, these NMFS scientists proposed a host of modifications to the operations of the CVP to attempt to prevent the extinction of Sacramento River winter-run Chinook salmon, CV spring-run Chinook salmon and CCV steelhead, in what would have been a Reasonable and Prudent Alternative ("RPA"). The final Biological Opinion may vary from the version dated July 1, 2019. However, the likelihood that any final Biological Opinion requires modifications to the proposed action remains high. The public must be provided with an opportunity to review and comment on a DEIS that fully discloses the opinions of USFWS and NMFS regarding the proposed action in order to comply with NEPA.	
22	3	RECLAMATION MUST STUDY A REASONABLE RANGE OF ALTERNATIVES, INCLUDING ALTERNATIVES THAT WOULD RESTORE AND ENHANCE FISH POPULATIONS Reclamation continues to ignore its statutory mandates under the Central Valley Project Improvement Act, Public Law No. 102-575, ("CVPIA"), and other laws, to appropriately account for the water needs of fish and wildlife in its operation of the Central Valley Project ("CVP"). E.g. CVPIA §§ 3402(a) (purpose to "protect, restore, and enhance fish, wildlife, and associated	Please see response to comment 22-1. Also see Master Response 1, Responses to General Comments regarding CVPIA.

Ltr#	Cmt#	Comment	Response
		habitats”), 3406(b) (Reclamation “shall operate the [CVP] to meet all obligations under state and federal law, including but not limited to the federal Endangered Species Act . . . and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project”), 3406(b)(1) (objective to “implement a program which makes all reasonable efforts to ensure that by 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991”) (emphasis added); Water Infrastructure Improvements for the Nation Act, Public Law 114-322 (“WIIN Act”) § 4010(d)(8)(B) (exempting two fish restoration actions from CVPIA (3406(b)(1) – thus indicating its otherwise continued applicability). In the nearly thirty years since Congress passed the CVPIA, populations of native fish in the Bay Delta have not doubled, as contemplated by the CVPIA. Instead populations of native salmon, steelhead, and smelt have continued their steep decline toward extinction. Yet Reclamation proposes, through the DEIS, to “maximize water supply deliveries and optimize marketable power generation,” without considering alternatives that implement the CVPIA’s fish-restoration goals. DEIS 1-2, DEIS 3-1 (dismissing from consideration an alternative that “considers instream flow needs determinations for all [CVP] controlled streams and rivers pursuant to CVPIA section 3406(B)(1)(B)”). But NEPA directs that Reclamation “rigorously explore and objectively evaluate all reasonable alternatives, include reasonable alternatives not within the jurisdiction of the lead agency, and identify the agency’s preferred alternative. The existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” Westlands Water Dist. v. U.S. Dept. of Interior, 376 F.3d 853, 868 (9th Cir. 2004) (internal quotations and citations omitted). And while the alternatives examined in the DEIS are expected to satisfy Reclamation’s purpose and need for its action, Reclamation may not improperly narrow its statement of purpose or need to foreclose an adequate analysis of alternatives. City of Carmel-By-The-Sea v. U.S. Dept. of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997); National Parks & Conservation Ass’n v. Bureau of Land Management, 606 F.3d 1058, 1072 (9th Cir. 2010) (NEPA forbids agency from “defin[ing] its objectives in unreasonably narrow terms”). Reclamation has failed to comply with these NEPA mandates.	
22	4	Although Reclamation initially states that “the need for the action is to use updated scientific information to better meet statutory responsibilities of the	Please refer to responses to comments 22-1 and 22-3.

Ltr#	Cmt#	Comment	Response
		CVP and SWP," it undermines and contradicts that purpose by then stating to the contrary that "[t]he purpose of the action considered in this EIS is to continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species." DEIS 2-2 (emphasis added). Thus, Reclamation has improperly narrowed its purpose to avoid studying alternatives that would meet CVPIA section 3604(b) goals to restore fish species that have been decimated by the CVP [Footnote 2: In furtherance of these goals, Reclamation must also study and implement the actions mandated by the 2008 USFWS Biological Opinion RP A and 2009 NMFS Biological Opinion RP A that it has, thus far failed to implement on grounds that they require additional environmental evaluation. See DEIS 3-4. In its 2015 Final EIS for the Long-Term Operation of the CVP, Reclamation assumed that these actions would be completed by 2030. E.g. 2015 FEIS 3-22 to 3-23.].	
22	5	In addition to failing to analyze alternatives that would restore fisheries, Reclamation failed to study an alternative that implements the proposed RPA included in the July 1, 2019 Biological Opinion. The July 1, 2019 Biological Opinion makes clear that "large-scale fish passage and habitat restoration activities are necessary for improving the winter-run Chinook salmon [evolutionary significant unit] viability." I d., p. 60. The proposed RP A sets survival objectives and intervention components more stringent than those studied in the DEIS. Compare DEIS 3-24 with July 1, 2019 Biological Opinion, p. 945. Absent analysis of this alternative, Reclamation's DEIS fails to foster the required informed public participation and informed decision-making that NEPA requires.	Reclamation's consultation with NMFS resulted in a final October 22, 2019 Biological Opinion which represents NMFS decision.
22	6	Reclamation's emphasis on maximizing water deliveries and power generation over fish survival runs counter to the mandates of the CVPIA and the Endangered Species Act. By failing to study a reasonable range of alternatives, and by failing to disclose the opinions of informed expert scientists regarding the impacts of its proposed action, Reclamation has failed to foster informed public decision-making in violation of NEPA.	Please see Master Response 4, Alternatives Formulation regarding the range of alternatives evaluated.

Ltr#	Cmt#	Comment	Response
23	1	CCWD and Reclamation staff have worked together on an agreed-upon framework to avoid the adverse environmental effects that the ROC on LTO could have on CCWD. The framework is designed to ensure that the ROC on LTO is implemented in a way that does not restrict CCWD's ability to fill its Los Vaqueros Reservoir, beyond the restrictions that already are imposed by the prior biological opinions and permits that are specific to CCWD's operations and that are separate from the proposed action here. This approach is expressly reflected in the Proposed Action in Reclamation's January 2019 Final Biological Assessment for the ROC on LTO. The Final BA states that, as part of the Proposed Action, "Reclamation will work with CCWD to ensure that implementation of the proposed action will not restrict CCWD operations beyond the restrictions of the separate biological opinions, allowing CCWD to have opportunities to fill Los Vaqueros Reservoir that are at least comparable to the current conditions." This approach also is reflected in Draft EIS. The environmental analysis uses modeling and assumptions for all the alternatives that are premised on the commitment by Reclamation not to create restrictions as part of the ROC on LTO that would affect CCWD's filling operations beyond the pre-existing restrictions in the CCWD-specific biological opinions and permits. While this commitment already is explicitly stated in Reclamation's Final BA and also is reflected in the environmental analysis and modeling in the Draft EIS, the Final EIS should make it clear that the commitment by Reclamation not to create new or additional restrictions on CCWD's ability to fill its Los Vaqueros Reservoir is an integral part of the proposed federal action and the alternatives for the NEPA review for the ROC on LTO. We very much appreciate Reclamation for making this important and valuable commitment, which will serve to avoid the adverse environmental impacts that could negatively affect CCWD, its operations, and its customers. In the event that this commitment by Reclamation is not included as a component of the proposed federal action or otherwise is not implemented, then there will be potential negative water quality, water supply, and aquatic resources impacts that would require additional NEPA evaluation. The attachment to this letter describes those potential negative impacts in detail. We are confident that the cooperative framework we have worked with Reclamation to develop, in order to prevent any new or additional restrictions as part of the ROC on L TO that would affect CCWD's filling of its Los Vaqueros Reservoir, will avoid these negative impacts and thus the need for	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. As stated in the Draft EIS, Reclamation's commitment to not create new or additional restrictions on CCWD's ability to fill its Los Vaqueros Reservoir is a part of the proposed federal action and the alternatives for the NEPA review for the ROC on LTO. In addition to the commitment in the EIS, Reclamation is currently working on a process to formalize the commitment described in the EIS. The EIS modeling and analysis assumes such an agreement is in place. The Final EIS has been revised to more accurately reflect Reclamation's commitment to CCWD.

Ltr#	Cmt#	Comment	Response
		further NEPA evaluation. We look forward to working with you to finalize and implement this cooperative approach through an agreement that would be executed by CCWD and Reclamation, and we thank you for your continuing efforts in this regard.	
23	2	ATT1: Contra Costa Water District Comments on the July 2019 Re-initiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Draft Environmental Impact Statement August 26, 2019.	The commenter provided this attachment as part of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	3	ATT1: In its discussions with the Bureau of Reclamation (Reclamation) regarding the proposed action, Contra Costa Water District (CCWD) has expressed concerns over the potential adverse impacts that could occur as a result of the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project (ROC on LTO). These concerns have centered on the fact that the implementation of the ROC on LTO could create new or additional restrictions or limitations on CCWD's ability to fill its Los Vaqueros Reservoir, beyond the restrictions that already have been established in the biological opinions and permits that are specific to CCWD's operations and that are separate from the current proposed action. In response to CCWD's concerns about the potential adverse impacts from the ROC on LTO, Reclamation made the following commitment as part of the Proposed Action in its January 2019 Final Biological Assessment: "Reclamation will work with CCWD to ensure that implementation of the proposed action will not restrict CCWD operations beyond the restrictions of the separate biological opinions, allowing CCWD to have opportunities to fill Los Vaqueros Reservoir that are at least comparable to the current conditions." ROC on LTO Final Biological Assessment (Jan. 2019), Chapter 4 at p. 4-44. This element of the Proposed Action will be referred to as "Reclamation's commitment" or "the commitment by Reclamation" in these comments. This commitment by Reclamation is also incorporated into the environmental analysis in Reclamation's Draft Environmental Impact Statement (Draft EIS). Specifically, the modeling for the No Action Alternative and for all the action alternatives assumes that CCWD would continue to be governed by its own biological opinions and permits, without new or additional restrictions or limitations as a result of the ROC on LTO.	See response to comment 23-1.

Ltr#	Cmt#	Comment	Response
		CCWD very much appreciates this commitment by Reclamation, which would serve to reduce or avoid the adverse impacts that are detailed in these comments. In the event that Reclamation's commitment is not fully implemented and the ROC on LTO creates or results in new or additional restrictions on CCWD's ability to fill its Los Vaqueros Reservoir, adverse environmental consequences are likely to occur, including impacts to water quality, water supply, and aquatic resources that would negatively affect CCWD's operations and its customers. Such adverse impacts are not adequately evaluated in the Draft EIS because the Draft EIS assumes that Reclamation's commitment is implemented. But without this commitment by Reclamation, these adverse impacts could occur and further evaluation by Reclamation would be required under the National Environmental Policy Act (NEPA). These adverse environmental effects are described in detail in Sections 2 and 3 below. To avoid confusion, the Final EIS should make clear that the commitment by Reclamation that implementation of the ROC on LTO will not create new or additional restrictions on CCWD's ability to fill its Los Vaqueros Reservoir constitutes an integral and essential part of the proposed federal action and the alternatives under NEPA review. As the process moves forward for the ROC on LTO, CCWD looks forward to working with Reclamation to finalize a cooperative framework to ensure that Reclamation's commitment is implemented, and that adverse impacts are avoided, through an operational agreement that would be executed by both parties.	
23	4	ATT1: 1.3.1. Existing conditions The current BOs for the coordinated long-term operation of the CVP and SWP (USFWS 2008 and NMFS 2009, which collectively will be referred to as the "current LTO BOs") include reasonable and prudent alternative actions for operation of CVP and SWP facilities to minimize their effect on listed species to avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. Based upon correlations with salvage of fish at the CVP Tracy Fish Collection Facility and the SWP Skinner Delta Fish Protective Facility, the current LTO BOs require Reclamation and the California Department of Water Resources (DWR) to operate to meet criteria for OMR as measured by the United States Geological Survey (USGS) in Old and Middle Rivers.	Reclamation utilizes the best available science for accurately depicting old and middle river flows. The equation used by Reclamation is an accurate, calibrated, peer reviewed equation. The overall issue raised will be further addressed in the agreement Reclamation is developing; see response to comment 23-1. Reclamation is committed to work with CCWD on scientifically supported updates.

Ltr#	Cmt#	Comment	Response
		The effect of CCWD's operations is so small that it is not detected in the measurement of OMR by the USGS. If Reclamation and DWR used measured OMR flows to assess compliance with OMR criteria, CCWD's operations would not have any effect on such compliance or the amount of water that CVP and SWP exports are allowed to divert. However, because forecasting the net flow in Old and Middle Rivers is difficult, Reclamation and DWR implement the OMR criteria by using an equation to estimate OMR, rather than using the measured OMR. As CCWD's diversions do not affect the measured OMR, Reclamation and DWR could use an equation that does not include CCWD operations while still providing the same level of protection for fish. (CCWD, 2012) Nonetheless, Reclamation and DWR have chosen to use an equation that includes CCWD's diversions at its Old River Intake and Middle River Intake. The use of this equation creates an artificial situation under which CCWD's diversions can affect how much water the CVP and SWP are allowed to export. CCWD's water right permit to fill Los Vaqueros Reservoir from its intakes in the Delta (State Water Resources Control Board, Water Right Permit Number 20749) does not authorize diversion when "such diversion would directly or indirectly require the Central Valley Project or the State Water Project to release water from storage or to reduce their diversion or rediversion of water from the Delta to provide or assure flow in the Delta required to meet any applicable provision of state or federal law." (SWRCB, 2010, Term 23, pp. 5-6). In recent years, Reclamation and DWR have invoked the water right permit term quoted above to curtail CCWD's use of its own water right permit to fill Los Vaqueros Reservoir during times when exports for the CVP and SWP are limited by regulation of OMR. CCWD believes this curtailment is inappropriate, because CCWD's diversions do not affect measured OMR flow, which is the applicable metric in the current LTO BOs. As explained above, Reclamation and DWR have chosen to use an equation that includes CCWD's diversions, which creates a contrived set of circumstances in which diversions under CCWD's water right are deemed to have an effect on CVP and SWP exports, which in turn is used as the basis to trigger Term 23 in CCWD's water right permit. When OMR limits CVP and SWP exports, there is plenty of water available in the system – the Delta is not in balanced conditions. An equation for OMR flow that provides fish protection equivalent to the measured OMR flow but does not include CCWD's	

Ltr#	Cmt#	Comment	Response
		diversions would meet the requirements under the current LTO BOs without unwarrantedly curtailing CCWD's diversions.	
23	5	ATT1: Under the current regulatory regime and despite the use of an OMR index that includes CCWD's operations, CCWD, Reclamation, and DWR have worked together to successfully coordinate operations so that in-Delta objectives and fishery regulations are met with reduced impacts to water supply. Since 2013, CCWD and Reclamation have requested that CDFW, USFWS, and NMFS allow CCWD's no-diversion period and no-fill period to be modified to allow coordination with CVP and SWP operations. CCWD and Reclamation have provided sufficient evidence that this can be done without harm to listed species, such that the fishery agencies have approved these requests. Typically, CCWD's operational limits, which are calendar-based restrictions in the CCWD-specific BOs and permits, are modified to align with time periods when OMR may potentially limit CVP and SWP exports. This practice has allowed CCWD to fill Los Vaqueros Reservoir when regulations other than OMR are limiting CVP and SWP exports. Both water rights decision D-1641 and the 2009 NMFS BO impose restrictions on SWP and CVP exports that do not apply to CCWD diversions. D-1641 includes restrictions on exports to meet the export to inflow ratio (E:I) and the Vernalis inflow to export ratio (Vernalis 1:1). CCWD diversions are not considered "exports" for these export limitations in D-1641. Similarly, the 2009 NMFS BO includes restrictions on exports to meet the San Joaquin River inflow to export ratio (SJR IE), and CCWD diversions are not considered "exports" for the SJR IE. When the CVP and SWP exports are directly limited by such regulations, CCWD has been able to fill Los Vaqueros Reservoir without affecting CVP and SWP exports. Most of CCWD's filling in recent years has occurred when the SJR IE governs CVP and SWP operations in April and May. From 1999 through 2017, the CCWD-specific BOs and permits have restricted CCWD operations more often than the current LTO BOs have limited CVP and SWP exports to meet OMR criteria (Figure 1-1 below). Modification of CCWD's operational limits as discussed above, to align with time periods when OMR may limit CVP and SWP exports, allows implementation of the current LTO BOs without additional restrictions on CCWD's filling of Los Vaqueros Reservoir.	Please see response to Comment 23-1.
23	6	ATT1: Exhibit 1: Figure 1-1. Comparison of reduction in diversions under current BOs and permits. Number of days each year that CVP and SWP exports	Please see response to comment 23-1.

Ltr#	Cmt#	Comment	Response
		have been reduced to meet OMR requirements in the current LTO BOs and the number of days each year that CCWD diversions have been reduced at Old River and Middle River per the CCWD-specific BOs and permits.	
23	7	ATT1: 1.3.2. Coordination under ROC on LTO Alternative 1 and Alternative 4 in the ROC on LTO Draft EIS propose modifications to CVP and SWP export operations that likely would increase the percentage of time that the CVP and SWP exports would be limited by OMR flow regulations. In recent years, Reclamation and DWR have asked CCWD to curtail its use of its own water right permit to fill Los Vaqueros Reservoir during times when exports for the CVP and SWP are limited by regulation of OMR. Any increase in the amount of time that OMR flow regulations limit exports could result in adverse impacts to CCWD's operations and its customers. Alternative 1 (Reclamation's Preferred Alternative under NEPA and the Proposed Action in the Biological Assessment) proposes to eliminate the SJR IE regulation. In place of SJR IE, Reclamation proposes to modify Old and Middle River management using an OMR index computed using an unspecified equation. ROC on LTO Draft EIS, Section 3.4.5.6 at pp.3- 31 to 3-36. The SJR IE was designed to reduce the impacts of the CVP and SWP export facilities on San Joaquin River origin fish by directly limiting CVP and SWP exports. Replacing the SJR IE with a new OMR restriction and basing compliance on the currently used OMR equation could remove the current operational flexibility and restrict CCWD's filling of Los Vaqueros Reservoir, effectively forcing CCWD to reduce its diversions to mitigate the effects of the CVP and SWP export facilities. Alternative 4 in the Draft EIS would include a positive combined OMR from March through May, and, during drier hydrologic conditions when the flow objectives are not met, Reclamation and DWR would operate the CVP and SWP to follow the operational objectives described in Alternative 1. ROC on LTO Draft EIS, Section 3.7 at p. 3-48. The resulting set of conditions – i.e., operating to a positive combined OMR from March through April, operating to the operational objectives described in Alternative 1, and basing compliance on the currently used OMR equation – could remove the current operational flexibility and restrict CCWD's filling of Los Vaqueros Reservoir. Reclamation's Proposed Action in the Biological Assessment includes a commitment that implementation of ROC on LTO will not restrict CCWD's operations beyond the restrictions that already are specified in the CCWD-specific BOs and permits, and analysis in the Draft EIS assumes compliance	Please see response to comment 23-1.

Ltr#	Cmt#	Comment	Response
		with this commitment. Reclamation and CCWD are developing a cooperative framework to implement Reclamation's commitment through an operational agreement that would be executed by both parties. The sections that follow describe the adverse environmental impacts that could result from the changes in water operations that the ROC on LTO would cause if Reclamation's commitment is not implemented. In its Final EIS, Reclamation should make clear that this commitment is incorporated into the all alternatives as an integral and essential project component of the ROC on LTO.	
23	8	ATT1: Salinity increases could be significant CCWD operates its facilities to deliver low-salinity water to its customers year-round. The Los Vaqueros Reservoir and Old and Middle River intakes were built for this purpose. CCWD integrates operation of all its facilities based on water quality in the Delta, shifting diversions between its intakes and modifying Los Vaqueros filling and releases in response to salinity changes. The ROC on LTO Draft EIS presents Electrical Conductivity (EC), a measure of salinity, at each of CCWD's Delta intakes. The effects of Alternative 1 are summarized in Table 2-1 [Exhibit2]. The increase in salinity from September through January is consistent between alternatives and is related to the proposed removal of an operational criterion (i.e., Fall X2) that is required by the current USFWS LTO BO (USFWS, 2008). The increase in salinity at CCWD's intakes in the fall and early winter due to Alternative 1 would cause significant changes to CCWD's operations in its attempt to continue to deliver high quality water to its customers. The predicted decrease in salinity at some of CCWD's ntakes during the wet season would not offset [Footnote 5: The salinity reduction in the winter is likely due to a reduction in the dominance of agricultural drainage in the south Delta. During the summer and fall, seawater intrusion from San Francisco Bay is likely to dominate, but in the winter and spring, river flows are often high, and seawater is repelled from the Delta. During those higher runoff periods, agricultural drainage from the San Joaquin River and local discharges dominates. (Denton, 2015). The ratio of chloride to EC is less for agricultural drainage than for seawater. A reduction of 10 EC when agricultural drainage dominates is approximately a reduction of 1.5 mg/l chloride, while an increase of 10 EC when seawater dominates is an increase of approximately 2.85 mg/l chloride. (Denton, 1997). Furthermore, a reduction in salinity in the winter or spring when salinity is already low enough to meet CCWD's water quality goals without blending with water stored in Los Vaqueros Reservoir will not alter	Please see responses to comments 23-1 and 23-4. This comment provides a summary of modeled changes in electrical conductivity (EC) at CCWD intake locations presented in Draft EIS Appendix F for Alternative 1 and interpretation of the modeling results relative to the No Action Alternative. CCWD also presents the percent of time its chloride goal of 65 mg/L would be met under the No Action Alternative and Alternative 1 based on its own modeling sensitivity analyses. As noted by the commenter, the Draft EIS does indicate the potential for increases in EC and chloride during the September through January period at CCWD intake locations and describes Alternative 1's continued operation of the CVP and SWP in real-time to meet the Bay-Delta Plan EC and chloride objectives for protection of Delta beneficial uses.

Ltr#	Cmt#	Comment	Response
		CCWD's operations.] the significant salinity increases in the fall and early winter. If Reclamation's commitment to allow CCWD opportunities to fill Los Vaqueros Reservoir that are at least comparable to current conditions is not implemented, the salinity changes due to Alternative 1 would cause increases to the chloride concentration in CCWD's delivered water (Table 2-2 [Exhibit 3]). If Reclamation's commitment is effectuated to ensure that implementation of the ROC on LTO will not restrict CCWD operations beyond the restrictions of the CCWD-specific BOs and permits, the impacts to CCWD's delivered water quality would be reduced.	
23	9	Exhibit 2: Table 2-1. Salinity (Electrical Conductivity, in µS/cm) near CCWD's Intakes. Monthly average salinity in the No Action Alternative and the expected monthly average change in salinity under Alternative 1. Source: ROC on LTO Draft EIS, Appendix F, Attachment 3-6, Tables 8-1, 10-1, 17-1, and 18-1.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	10	Exhibit 3: Table 2-2. Impact to CCWD's ability to meet its water quality goals Percent of time that CCWD is able to meet its water quality goal to deliver water with no more than 65 mg/l chloride concentration under the No Action Alternative and Alternative 1. Source: Sensitivity studies performed by CCWD; the studies show the conditions that would occur if Reclamation fails to implement its commitment not to create new or additional restrictions on the ability of CCWD to fill Los Vaqueros Reservoir.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	11	2.1.2. ATT1: Salinity increases are potentially underestimated Alternative 1 includes a delta smelt summer-fall habitat action, which "may include" operation of the Suisun Marsh Salinity Control Gates (SMSCG) for up to 60 days in June through October of below normal, above normal, and wet years. ROC on LTO Draft EIS Section 3.4.5.8 at pp. 3-37 to 3-38. Operation of the SMSCG will reduce salinity in Suisun Marsh and increase salinity in the Delta. The operation was not simulated in the analysis for the Draft EIS, but the Draft EIS does acknowledge that salinity would be different due to operation of the SMSCG. Information about the effect of operating the gates is available from DWR's experimental gate operation in August 2018, a below normal water year. The	The comment presents salinity data for CCWD's Old River intake from 2008-2017 and compares that to data from 2018 when DWR conducted an experimental operation of the Suisun Marsh Salinity Control Gates (SMSCG) to show that inclusion of the SMSCG operation proposed for Alternative 1 could result in higher summer salinity levels at the intake. The EIS indicates the potential for operation of the SMSCG to generate changes in the salinity parameters identified. The EIS then goes on to describe Reclamation and DWR's continued commitment under Alternative 1 to operate the SMSCG and the CVP and SWP in real-time to minimize the potential for unintended changes to Delta salinity.

Ltr#	Cmt#	Comment	Response
		gates were operated from August 2 through September 7, 2018, for a total of 37 days. DWR reported that they provided an additional 37 TAF of Delta outflow during this time to prevent exceeding D- 1641 salinity objectives. Despite the additional outflow, chloride concentration at CCWD's Old River intake more than tripled during the gate operation, staring at 41 mg/l Cl on August 2 and increasing to 136 mg/l Cl on September 7. It is not unusual for salinity to increase at CCWD's intakes in August; however, the magnitude of the increase and the rate of increase in 2018 was significantly greater than in prior years. Figure 2-1[Exhibit4] illustrates that salinity in August 2018 when the gates were operated more than tripled, a far greater rise than in any other August from 2008 to 2016. Figure 2-2 [Exhibit5] illustrates the daily rate of change in chloride concentration at CCWD's Old River intake. The median rate of change in 2018, 2.9 mg/l/day, is more than double the median rate of change in 2012, 1.2 mg/l/day, which was a similar below normal water year. The abnormality of salinity changes in August 2018 illustrates the need for the effects of SMSCG to be evaluated and disclosed.	The Alternative 1 modeling for the Draft EIS did not include changes to SMSCG operations and did not include any Fall X2 operation. The revised Alternative 1 modeling includes actions for Summer-Fall Habitat improvements including up to 60 days of SMSCG operations in the June through October period in BN, AN and W years and X2 operations of 80 km in September through October in AN and W years. The revised Alternative 1 modeling generally shows similar salinity conditions at CCWD intakes compared to the No Action Alternative. The revised Alternative 1 modeling of the SMSCG operations was based on simplified hydrologic metrics that generally aligned with low salinity conditions. The timing of these conditions typically indicated that the 60 days of SMSCG operations would occur earlier in the June and July period in BN years gradually progress to July and August in W years. The revised Alternative 1 modeling represents one potential realization of the action based on generalized rules. The specifics of the real-time operation of the action will depend on existing regulations including D1641; and several factors and actions that influence Delta Smelt habitat in the Suisun Marsh and the larger Delta region. These specifics will be defined through further testing, monitoring and adaptive management of Delta Smelt habitat. The historical example given by the commenter does not fully explain the reason of the increase in chloride levels as those levels could be affected by other operations in the Delta.

Ltr#	Cmt#	Comment	Response
23	12	Exhibit 4: Figure 2-1. Salinity at CCWD's Old River intake during August, normalized by the salinity on August 1 of each year. Grey lines represent the salinity in water years 2008 through 2017. Red line represents the salinity in 2018.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	13	Exhibit 5: Figure 2-2. Rate of increase of salinity at CCWD's Old River intake during August. Each panel is a statistical boxplot of the daily rate of change in chloride concentration at CCWD's Old River intake for all days in August. Left panel represents 2008 through 2018; center panel is 2012 (below normal water year); right panel is 2018 (below normal water year). Blue dot on the left panel indicates the median for 2012; Red dot on the left panel indicates the median for 2018; black dots on center and right panels indicate the median for all years 2008- 2018.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	14	2.1.3. ATT1: Increased salinity may create significant public health impacts The ROC on LTO Draft EIS identifies bromide as a constituent of concern because it reacts with municipal water treatment plant disinfectants to form regulated disinfection byproducts. ROC on LTO Draft EIS, Appendix G at p. G-42. However, the analysis presented in the ROC on LTO Draft EIS falls short of determining the public health impacts of elevated levels of bromide. Bromide is of concern in water as a precursor to the formation of disinfection byproducts such as bromate, bromoform and other brominated trihalomethanes (THMs), and haloacetic acids (HAAs), all of which are potentially harmful in municipal water supplies (CALFED, 2007 at p. ES-1). Research has shown that these disinfection byproducts cause cancer, kidney failure, thyroid disorders, and negative developmental and reproductive effects in laboratory animals (USEPA, 2013a). The production of carcinogens is directly related to bromide concentration (USEPA, 1998), which can be estimated from the EC using the following equation (DWR, 2001). Bromide Contra Costa Pumping Plant #1 = 0.96 x (EC Old River at Rock Slough) – 114, where Bromide is in µg/l and EC is in µS/cm The long-term average EC in Old River at Rock Slough in October is 619 µS/cm in the No Action Alternative and would increase to 865 µS/cm under Alternative 1. ROC on LTO Draft EIS, Appendix F, Table 8-1. This corresponds to a bromide concentration of 481 µg/l in the No Action Alternative and 717 µg/l in Alterative 1; an increase of 236 µg/l bromide. Assuming all other variables remain unchanged, the bromide concentration at the Contra Costa Pumping Plant #1 could cause bromate formation to increase	The comment presents quantified bromate concentrations from calculated bromide concentrations based on a model developed by USEPA. (Note that the cited USEPA document contains several models for bromate formation and the comment does not identify which equation was used). The USEPA models for bromate formation were developed from bench scale tests conducted on raw water sources from across the country. Because they were not developed directly from CCWD drinking water plant data, they can only be used to provide a general indication regarding bromate formation potential and not in a predictive manner. While no bromate model is used in the EIS bromide analysis, the analysis discloses that there may be greater potential for disinfection byproduct formation (which includes bromate) under the alternatives, compared to the No Action Alternative, but the degree to which that would occur is uncertain (see Appendix G, page G-95). Also, the comment quantifies cancer risk associated with the CCWD-modeled bromate concentration; however, the baseline bromate concentration in CCWD drinking water and its basis (e.g., average for 2018 or some other period) are unclear. Further, the cited cancer risks are not consistent with California's Office of Environmental Health Hazard Assessment (OEHHA) data. At California's bromate maximum contaminant level (MCL) of 10 ug/L, the cancer risk at is 1 per 10,000. (https://oehha.ca.gov/water/public-health-goal-report/health-risk-information-public-health-goal-exceedance-reports-2019). Cancer risk, whether based on OEHHA's data or USEPA's IRIS data as the comment does, assumes a lifetime of exposure from drinking water at the specified concentration. Yet the bromide and bromate concentrations cited in the comment are based on EC changes only in October. Thus, the increased

Ltr#	Cmt#	Comment	Response
		by 2.7 µg/L under Alternative 1 to 8.2 µg/L (USEPA, 1998); this corresponds to an increase in cancer risk from 1.1 to 1.6 people per 10,000 people for populations served from the Rock Slough intake (USEPA, 2013b). Rather than disclosing the potential impact to public health, the ROC on LTO Draft EIS erroneously asserts that Alternative 1 would not contribute to drinking water impairment, stating that "[t]reatment plants that use the Delta as a source for drinking water already experience highly variable bromide concentrations and, thus, must implement appropriate treatment technologies to ensure compliance with drinking water regulations for disinfection byproducts." ROC on LTO Draft EIS, Appendix G, p. G-95. The primary method that CCWD employs to address the seasonal fluctuations in Delta salinity is the use of Los Vaqueros Reservoir to blend water supplies to appropriate salinity levels before treatment, as discussed in Section 2.2 Water Supply below. If Reclamation's commitment is effectuated to ensure that implementation of the ROC on LTO would not create new or additional restrictions on CCWD's ability to fill Los Vaqueros Reservoir that would facilitate use of Los Vaqueros Reservoir as a source of blending water and thereby reduce the potential public health impacts discussed above.	cancer risks cited in the comment would not necessarily occur with Alternative 1. In summary, the EIS bromide analysis sufficiently discloses the potential for higher bromide concentrations under alternatives compared to the No Action Alternative, based on quantitative analysis and qualitative considerations.
23	15	ATT1: Los Vaqueros Reservoir The ROC on LTO could adversely affect CCWD's water supplies stored in its Los Vaqueros Reservoir by: (1) reducing the availability of high quality water at CCWD's intakes and (2) reducing the amount of time when CCWD can fill Los Vaqueros Reservoir, even if low- salinity water is available at its intakes. Each of these mechanisms is briefly discussed below, followed by a summary of the combined effect on CCWD's water supply. (1) Reduced availability of high quality water at CCWD's intakes. The ROC on LTO Draft EIS identifies changes in salinity at CCWD's intakes. However, the document does not disclose or evaluate the full nature of this impact. This is because there is no consideration in the Draft EIS of how the changes in water quality would affect CCWD's water supplies by increasing demand on Los Vaqueros Reservoir to compensate for the degradation in Delta water quality caused by the ROC on LTO. When water in the Delta near CCWD's intakes is salty, CCWD releases high-quality (low-salinity) water from Los Vaqueros Reservoir to blend with the relatively high salinity water diverted directly from Delta channels. Blending	The commenter has noticed that the Alternative 1 project description of CCWD operations is not identical to that which was provided in the DEIS. Project description of CCWD operations have been updated accordingly.

Ltr#	Cmt#	Comment	Response
		with high-quality stored water allows CCWD to deliver high-quality water to its customers throughout the year; if Delta salinity rises, more blending water from Los Vaqueros is required. (2) Reduced ability to fill Los Vaqueros Reservoir when low-salinity water is available. Without Reclamation's commitment to ensure that implementation of the ROC on LTO will not restrict CCWD operations beyond the restrictions in the CCWD-specific BOs and permits, the ROC on LTO would also reduce CCWD's ability to fill Los Vaqueros Reservoir by increasing the amount of time when OMR limits CVP and SWP exports. In recent years, Reclamation and DWR have asked CCWD to curtail diversions under its own water right permit to fill Los Vaqueros Reservoir during times when CVP and SWP exports are limited by regulation of OMR. Increasing the amount of time that OMR limits CVP and SWP exports will impact CCWD's ability to fill Los Vaqueros Reservoir. CCWD would alter its operations in response to both the reduced availability of high quality water at its intakes and the reduced ability to fill Los Vaqueros Reservoir, in an effort to continue to deliver high quality water to its customers. The subsequent impact to CCWD's water supply is not disclosed in the ROC on LTO Draft EIS, because the modeling assumes that Reclamation will implement its commitment. To evaluate the potential impacts, CCWD conducted sensitivity studies based on the modeling performed for the ROC on LTO Draft EIS, as follows: CCWD used the Delta Simulation Model II (DSM2) to determine chloride concentration at its intakes and used this water quality data in a model that simulates the operation of CCWD's raw water facilities, including its Delta intakes and Los Vaqueros Reservoir. To examine the effects of failing to implement Reclamation's commitment regarding Los Vaqueros Reservoir, the studies assume that CCWD's filling of the reservoir is not allowed when OMR restricts CVP and SWP exports. CCWD's analysis found that the ROC on LTO Alternative 1 would have significant impacts to storage in Los Vaqueros Reservoir, with the most severe impacts occurring during droughts when CCWD water supply is most vulnerable. With the increase to chloride concentration identified in the ROC on LTO Draft EIS and the potential reduction in CCWD's ability to fill its Los Vaqueros Reservoir, storage in Los Vaqueros Reservoir would be reduced, leaving less water available to mitigate increases in Delta salinity and less water available	

Ltr#	Cmt#	Comment	Response
		for emergency supplies. As shown in Figure 2-3 [Exhibit 6] below, Reclamation's Proposed Action, Alternative 1, would result in significant reductions in storage in Los Vaqueros Reservoir compared to the No Action Alternative. Under the No Action Alternative, Los Vaqueros Reservoir would store 123 TAF on average; under Alternative 1, Los Vaqueros Reservoir would store only 104 TAF on average, a reduction of 19 TAF or almost 12% of the reservoir capacity. Furthermore, without the ROC on LTO, Los Vaqueros Reservoir would remain above the emergency storage level [Footnote 7: As documented in the CCWD-specific BOs and permits, during wet, above-normal and below-normal years, 70 thousand acre-feet of water is designated as emergency storage; during dry and critical years, 44 thousand acre-feet is designated as emergency storage (e.g. NMFS, 1993; USFWS, 1993).] designated for wet, above normal, and below normal years (70 thousand acre-feet) 82% of the time under the No Action Alternative; however, Alternative 1 would reduce storage such that the reservoir would be above this level only 75% of the time. When the reservoir reaches emergency storage, CCWD modifies its operations to retain as much water for an emergency as possible. The poorer water quality and lower reservoir storage levels resulting from the ROC on LTO would reduce the amount of water available for blending and drought relief before emergency storage levels are met, and could significantly limit CCWD's resiliency during a prolonged drought or a catastrophic event. Figure 2-4 [Exhibit 7] shows the impacts that ROC on LTO Alternative 1 would have on storage in Los Vaqueros Reservoir during a six-year drought that is based on the historical drought from 1929 through 1934. Without the ROC on LTO (in the No Action Alternative), reservoir storage would average 81 TAF during this drought compared to an average of just 52 TAF under Alternative 1 during the same hydrologic conditions. Figure 2-3 [Exhibit 6] and Figure 2-4 [Exhibit 7] above illustrate how the Reclamation's Proposed Action, Alternative 1, would impact storage in Los Vaqueros Reservoir; similar impacts would occur under all ROC on LTO alternatives that have significant impacts on salinity at CCWD's intakes and prevent CCWD from refilling Los Vaqueros Reservoir with high quality water. Implementation of Reclamation's commitment as assumed in the analysis for the ROC on LTO Draft EIS would reduce many of the impacts to storage in Los Vaqueros Reservoir discussed above.	

Ltr#	Cmt#	Comment	Response
23	16	The ROC on LTO Draft EIS uses an inappropriate equation for bromide estimation. The equation in Appendix G on p. G-94 is only appropriate when the Martinez volumetric fingerprint as determined by DSM2 is less than 0.4% (DWR, 2012). The Martinez volumetric fingerprint is highly variable in the Delta and is typically above 0.4% in the fall and winter months (Hutton, 2006).	The comment states that the EIS used an inappropriate equation to convert modeled EC to estimated bromide concentrations. The commenter uses an equation from a DWR 2001 publication derived from relationships between EC and chloride, and chloride and bromide. The equation used in the EIS is from a DWR Modeling Section-produced report from 2012 titled Estimating Delta-wide Bromide Using DSM2-Simulated EC Fingerprints and is based on direct relationships between EC and bromide and were evaluated for use across the Delta. The equations in this report were used in the EIS bromide analysis because the analysis addresses the entire Delta. This report presents two equations to convert modeled EC to bromide, one for when the Martinez volumetric fingerprint is <0.4% and one for when the fingerprint is >0.4%. The "<0.4%" equation was used because it produced more conservative results for purposes of characterizing the incremental increase between the alternatives and the No Action Alternative. This approach was considered appropriate because the EIS analysis is not "predictive" in nature; rather it is characterizing potential magnitude and direction of the differences between the alternatives and the No Action Alternative.
23	17	Exhibit 6: Figure 2-3. Storage in Los Vaqueros Reservoir under the No Action Alternative and Alternative 1 for all months of the simulation, water years 1922-2003. The volume of water in storage in Los Vaqueros Reservoir would be greatly reduced by ROC on LTO Alternative 1. Source: Sensitivity studies performed by CCWD; the studies show the conditions that would occur if Reclamation fails to implement its commitment not to create new or additional restrictions on the ability of CCWD to fill Los Vaqueros Reservoir.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	18	Exhibit 7: Figure 2-4. Storage in Los Vaqueros Reservoir under the No Action Alternative and Alternative 1 during a 6-year drought, water years 1929-1934. The volume of water in storage in Los Vaqueros Reservoir would be greatly reduced by ROC on LTO Alternative 1 during a potential six-year drought. Source: Sensitivity studies performed by CCWD; the studies show the conditions that would occur if Reclamation fails to implement its commitment not to create new or additional restrictions on the ability of CCWD to fill Los Vaqueros Reservoir.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	19	CVP Water Supply ATT1: The modeling used to evaluate alternatives in the Draft EIS assumes that Reclamation's commitment (discussed in Section 1.1) is implemented and	The commenter has noticed that Alternative 1 project description of CCWD operations is not identical to that which was provided in the DEIS. Project description of CCWD operations have been updated accordingly.

Ltr#	Cmt#	Comment	Response
		CCWD would have opportunities to fill Los Vaqueros Reservoir that are at least comparable to the current conditions. If Reclamation's commitment is not implemented, the ROC on LTO Alternatives could have additional effects that have not been disclosed in the Draft EIS, including potential impacts to CVP water supply. Specifically, if Reclamation's commitment is not implemented, CCWD's diversions under its own water right would be reduced, and CCWD would need to increase its CVP deliveries to compensate and continue to meet customer demand. To evaluate the potential impacts, CCWD conducted sensitivity studies that assume CCWD's filling of Los Vaqueros Reservoir is not allowed when OMR restricts CVP and SWP exports as discussed in Section 2.2.1. CCWD's analysis determined that if Reclamation's commitment is not implemented, ROC on LTO Alternative 1 would increase CCWD's CVP deliveries in July through September in all year types (Figure 2-5) [Exhibit 8]. In wet and above normal years, the increase in CCWD's summer CVP deliveries is generally offset by a reduction in CCWD's fall CVP deliveries. However, in dry and critical years, CCWD's CVP deliveries would increase about 5 TAF/year. The ROC on LTO CalSim II modeling indicates that the additional CVP deliveries would be available under CCWD's CVP allocation. However, any increases to CCWD's CVP deliveries during balanced conditions would alter CVP operations, either increasing releases from upstream storage or reducing CVP exports. This potential impact to CVP storage or CVP South of Delta deliveries is not evaluated in the ROC on LTO Draft EIS. If Reclamation's commitment is effectuated to ensure that implementation of ROC on LTO will not restrict CCWD operations beyond the restrictions of the CCWD-specific BOs and permits, that would allow CCWD to have opportunities to fill Los Vaqueros Reservoir that are at least comparable to current conditions. This would reduce many of the impacts to CVP upstream storage and South of Delta deliveries.	
23	20	Exhibit 8: Figure 2-5. Change in CCWD's CVP deliveries between the No Action Alternative and Alternative 1. Source: Sensitivity studies performed by CCWD; the studies show the conditions that would occur if Reclamation fails to implement its commitment not to create new or additional restrictions on the ability of CCWD to fill Los Vaqueros Reservoir.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

Ltr#	Cmt#	Comment	Response
23	21	ATT1: Operational Costs Changes in water quality and use of Los Vaqueros Reservoir under the Alternatives could have an economic impact on CCWD and its customers, through increased water and power costs. 2.3.1. Water cost CCWD diverts water from the Delta under its CVP contract, under its own water right permits and license issued by the SWRCB, and under East Contra Costa Irrigation District's pre-1914 water right. If Reclamation fails to adhere to its commitment that implementation of ROC on LTO will not create new or additional restrictions on CCWD's ability to fill Los Vaqueros Reservoir, the amount of water that CCWD would be able to divert under its own water right permits and license would be reduced and CCWD would need to purchase more CVP water supply. Reclamation's modeling in the Draft EIS indicates that CCWD's CVP allocation would be sufficient to support this shift in water supplies. However, the shift would create an economic impact on CCWD and its customers, since CCWD's CVP water cost is significantly higher than the cost of water diverted under CCWD's own water rights. Implementation of Reclamation's commitment would reduce this impact.	As noted in Appendix H, Water Supply Technical Appendix, Bay-Delta M&I water deliveries (includes supply to CCWD) are expected to increase under Alternative 1 (the Preferred Alternative), 2, and 3. Consequently, as discussed in Appendix Q, Regional Economics Technical Appendix, Bay Area M&I contractors (including CCWD) could reduce reliance on alternate water supply projects (such as water transfers) in lieu of increased CVP water supply reliability. Under Alternative 4, Bay-Delta M&I water supplies are expected to decrease and result in an increase in water supply costs. As summarized in Table Q.2-53 in Appendix Q, water supply costs for Bay Area M&I contractors would increase. East Contra Costa Irrigation District is an independent special district with pre-1914 water rights. This EIS only evaluates effects to CVP and SWP water supply and pre-1914 water rights are expected to remain unchanged.
23	22	ATT1: Power cost 2.3.2.1. Diversion location The cost of power to pump water from CCWD's intakes to its service area varies for each intake, and the changes in salinity under the alternatives will shift CCWD's diversions to the most expensive intake. Under Alternative 1, CCWD's Rock Slough diversions are expected to decrease by 2.8 TAF/year and CCWD's Old River diversions are expected to decrease by 2.0 TAF/year, while CCWD's Middle River diversions, which cost more for power than diversions at either of the other two intakes, are expected to increase by 4.2 TAF/year.	As discussed in Appendix H, Section H.2.4.1.1, water supply deliveries to Bay-Delta contractors (including CCWD) are expected to increase under Alternative 1. This increase in deliveries would increase water supply delivery costs, the effects of which are evaluated in Appendix Q, Regional Economics Technical Appendix. The EIS has been revised to clarify that the increases in water supply delivery costs that were noted in Appendix Q could also be generated by shifts in water user diversion patterns in response to changes in water quality conditions.
23	23	ATT1: Use of Los Vaqueros Reservoir Due to the changes in salinity under the alternatives, Los Vaqueros Reservoir is expected to release more water to blend with the saltier Delta diversions. CCWD will need to refill Los Vaqueros Reservoir to compensate for the increased blending releases. This additional refill is estimated to cost $59-77/acre-foot, [Footnote 8: Based on 2019 PG&E rates and estimated filling rate with all pumps in service and Los Vaqueros operating elevation of 500ft.] depending on the season. Furthermore, if Reclamation's commitment to allow	As was indicated in the responses to the CCWD comments 21 and comment 22, Appendix H, Water Supply Technical Appendix, notes that Bay-Delta M&I water deliveries (which includes supply to CCWD) are expected to increase under Alternatives 1 (the Preferred Alternative), 2, and 3. Appendix Q, Regional Economics Technical Appendix, details the anticipated increases in water supply delivery cost and water storage costs resulting from these increases in water supply deliveries. The EIS has been revised to clarify that the increases in water supply delivery costs could also be generated by shifts in

Ltr#	Cmt#	Comment	Response
		CCWD opportunities to fill Los Vaqueros Reservoir that are at least comparable to current conditions is not implemented, CCWD would have less opportunity to fill Los Vaqueros Reservoir in the spring, which would shift a larger portion of CCWD's filling operations to the summer when power costs are greater.	water user diversion patterns and changes in water storage costs could be generated by shifts in local reservoir storage patterns.
23	24	The modeling used to evaluate alternatives in the Draft EIS assumes that Reclamation's commitment is implemented and CCWD operations will not be restricted beyond the restrictions of the CCWD-specific BOs and permits. If Reclamation's commitment is not implemented, the ROC on LTO Alternatives could have additional effects that have not been disclosed in the Draft EIS. CCWD diversions in the Old and Middle River corridor have minimal impacts on listed species. The positive barrier fish screens, which are now installed at all of CCWD's intakes, have been proven to be highly efficient at preventing entrainment. As shown in Table 3-1 [Exhibit 9], no juvenile or adult listed fish species have been collected behind the fish screens during 20years of operation and monitoring. Only 16 larval fish have been collected, averaging less than one larval fish per year of operation. For comparison, Table 3-2 [Exhibit 10] summarizes the entrainment at CCWD's intakes and the entrainment of fish as reported through the salvage operations at the CVP and SWP export facilities. The entrainment numbers in Table 3-2 do not include the loss of fish due to predation within and near the facilities. There is no evidence of increased predation near CCWD's intake facilities, but the predation in Clifton Court Forebay (CCFB) and in front of the CVP trash racks and primary louvers has been estimated as shown in Table 3-3 [Exhibit 11]. If Reclamation does not implement its commitment as part of the proposed action to avoid creating new or additional restrictions on CCWD's ability to fill Los Vaqueros Reservoir, CCWD's diversions could be reduced up to 200 cfs with a corresponding increase of 200 cfs additional exports at either the CVP Jones pumping plant or the SWP Banks pumping plant. Reducing diversions at facilities that have minimal impacts in order to increase diversions at facilities that impact a significant fraction of the fish that encounter the facility would constitute a significant impact on Delta fish that is not evaluated or disclosed in the Draft EIS. Implementation of Reclamation's commitment to ensure that the ROC on LTO will not create or result in any restrictions on CCWD operations, beyond the	See response to 23-1.

Ltr#	Cmt#	Comment	Response
		restrictions of the CCWD-specific BOs and permits, would eliminate this potential impact.	
23	25	Exhibit 9: Table 3-1. Total fish collected behind the fish screens at the Rock Slough Intake, Old River Intake, and Middle River Intake for 1999-2018. During 20 years of monitoring, no juvenile or adult listed species have been observed behind the positive barrier fish screens.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
23	26	Exhibit 10: Table 3-2. Entrainment of Delta fish species at CCWD's Old and Middle River intake facilities and the CVP and SWP export facilities for 1998-2018. Since only fish greater than 20 mm in length are counted at the CVP and SWP export facilities, the entrainment numbers are limited to fish greater than 20mm. The entrainment numbers do not take prescreen loss or louver efficiency at the CVP and SWP export facilities into account.	Please refer to Appendix D, Alternatives Development Technical Memorandum, specifically Section 4.2.6.3.3. of Appendix D, which describes that prescreen loss and facility and louver efficiency have been evaluated for juvenile and adult Delta smelt, and that prescreen loss and facility efficiency have been evaluated for steelhead. The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required
23	27	Exhibit 11: Table 3-3. Predation mortality at CCWD's Old and Middle River intake facilities and the CVP and SWP export facilities.	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required

Ltr#	Cmt#	Comment	Response
24	1	-The promises of the 1941 Indian Land Acquisition Act -Salmon Restorage to what should be focus point -Water contamination of all rivers affects all generation -We should be a salmon state This action is the continuation of cultural genocide of the Winnemem Wintu children. The treatment of the Winnemem Wintu is a national disgrace and the salmon is a national sacrifice	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The ROC on LTO process is not the proper forum to seek redress for the claim of the right to land or compensation under the Treaty of Cottonwood Creek and the Act of July 30, 1941, 55 Stat. 612. Further, Reclamation is unaware of any Indian lands, whether tribal or allotted land, that will be inundated by any of the alternatives but were not previously transferred to the United States under the 1941 Act. The proposed changes in operations have three principal objectives: (1) provide enough cold water to optimize survival of the current year's Winter-Run Chinook Salmon eggs and alevins, (2) stabilize water levels through the fall to avoid dewatering redds and stranding juveniles of Winter-Run Chinook Salmon and other salmonids, and (3) conserve and rebuild Shasta Lake storage in the fall and winter to provide the cold water pool resources needed to optimize survival of the next year's Winter-Run Chinook Salmon eggs and alevins.

Ltr#	Cmt#	Comment	Response
			Native American groups would benefit from these spawning improvements. Please see Appendix O, Fish and Aquatic Resources, for a complete discussion of the effects of the project alternatives on salmonid resources of the Sacramento River. Please see Appendix G, Water Quality Technical Appendix, for a complete discussion of the effects on the project alternatives on water quality.

Ltr#	Cmt#	Comment	Response
25	1	[Page] 2-2 states that the "purpose of the action" is "to maximize water deliveries." I am concerned that fisheries and environmental integrity is not being prioritized adequately (See the 2015 BO and current controversies). Water delivery increases may require additional surface storage projects like the (illegal) Shasta enlargement, and would further jeopardize Delta fisheries which are already fragile.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments regarding the Purpose and Need for the project. No additional surface storage projects are proposed in this EIS. Please see Chapter 5, Cumulative Effects, Section 5.20 as well as Appendix Y, Cumulative Methodology for a discussion of direct and indirect impacts of a project together with past, present and reasonably foreseeable future actions of other project, including the Shasta Lake Water Resources Investigation.
25	2	Restoration efforts for mitigation should prioritize collaboration with and leadership by indigenous Californians.	Please see response to comment 25-1.
25	3	Outflow as proposed would decrease from current levels, which will have damaging impacts on Delta and anadromous species.	Please see Master Response 1, Responses to General Comments, for responses to general comments. Refer to Chapter 5, Environmental Consequences, Section 5.9.1.7, Bay-Delta, for discussion of reductions in Delta outflow in spring, summer, and fall under Alternative 1, and potential effects on aquatic resources.

Ltr#	Cmt#	Comment	Response
26	1	Suggest deletion [of “positive and negative” in first sentence of Section 1.3.2, page 1-3]	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The sentence was modified for clarity to read “potential positive and negative environmental effects”, but positive and negative were not removed.
26	2	Suggested edit- “location, with [areas in the] western Delta…” [page 1-3, Water Quality bullet, sentence beginning “The amount by which EC…”]	The suggested edit was reviewed; however, the wording of the area was deliberate therefore no change was made.
26	3	Strike duplicate % [Top of page 1-4]	The duplicate % was removed in response to the comment.
26	4	Here [top of page 1-4] and throughout the document- should be consistent as to whether these are called “deliveries” or “supplies”	Revisions have been made where appropriate.

Ltr#	Cmt#	Comment	Response
26	5	Analysis does not seem to incorporate impacts of SGMA implementation [Groundwater bullet text, Page 1-4]	Refer to Master Response 1, Response to General Comments, regarding the Sustainable Groundwater Management Act.
26	6	Alternative 4? [Sentence in Aquatic Resources bullet on page 1-4 is highlighted—sentence begins “Flows in Clear Creek would be similar…”]	The text in this section has been modified in response to your comment.
26	7	Modifications to Stanislaus River operations in Alternatives 2 and 3 may have ban impact on SJR inflows from the Stanislaus, according to the analysis. How are SJR flows the same if there’s a decrease in Stanislaus inflows under Alternatives 2 and 3. Is this dealing with an increase in Restoration Program flows? [Refers to page 1-5, first bullet, sentence “changes in San Joaquin River flows under all alternatives would be minimal.]	The Stanislaus River represents a contribution of flows in addition to the outflow from the lower San Joaquin River, Merced River, and Tuolumne River. The quoted text of the EIS does not infer that no changes would occur in flow within the San Joaquin River, but that the changes to the flow would be minimal and not result in a notable effect to overall fish fitness within the context of the overall system.
26	8	Is this anticipated to have a significant or insignificant impact on nesting habitat? Should be explicitly stated if significant, if insignificant, the sentence should be removed. [Refers to page 1-5, 2nd bullet, sentence “Alternatives 1-4 could potentially affect bank swallow habitat along the bank rivers and reservoirs through erosion of existing habitat; these changes decrease resting habitat for bank swallows.”	In response to the commenters request to explicitly state in Chapter 1 whether the impact on bank swallow nesting habitat is significant or insignificant, the text on Page 1-5 in Section 1.3.2, Analysis Overview has been updated to state that the impact on nesting habitat is anticipated to have a significant effect.
26	9	Suggested revision & addition “…groundwater supplies and increase operation costs [and potential impacts resulting from SGMA implementation” [Refers to page 1-5, 3rd bullet, sentence “Alternative 4 would decrease water supply deliveries to these agricultural users, which would increase reliance on groundwater supplies and increase operations costs.”]	As noted in Section 5.4, under SGMA, groundwater basins are not required to be sustainable until 2040 for medium and high priority basins with overdraft conditions or 2042 for medium and high priority basins without overdraft conditions. This time frame is beyond the range of the effects analysis in this EIS.
26	10	Missing “)” [Page 1-8, Section 1.4.1.1—Reference t Hobbes et al. 2019; Schultz et al. 2019]	Parentheses have been added to end of sentence in response to the comment
26	11	Spring? [Refers to page 1-8, Section 1.4.1.1.1, 4th sentence.]	The text has been modified for clarity.
26	12	Need to include referenced study in Appendix B. [Refers to last reference in Section 1.4.1.1.1 page 1-8]	Based on the location of the section and page number the commenter references, it is believed the commenter is referring to references to Sommer et al. 2018 and SWC/SLMDA 2018.
26	13	Incomplete sentence—to what effect? Benefit? [Refers to page 1-9, Section 1.4.1.3.1, 3rd sentence; “Some studies have suggested limited export of food web materials from restored areas to adjacent habitat (Lehman et al. 2010; Kimmerer et al. 2018).”]	The full context for the potential effect is noted in the following sentence in the DEIS, which states “The potential benefits to Delta Smelt from tidal marsh restoration therefore may be limited to localized effects.”
26	14	Incomplete—is it negative effect? Higher phytoplankton reduces zooplankton? [Refers to page 1-9 Section 1.4.1.3.2 2nd sentence; “Some authors have suggested that changes in phytoplankton and therefore zooplankton have arisen	The sentence is referring to the hypothesized linkage between reductions in phytoplankton that are consumed by Delta Smelt’s calanoid copepod prey and nutrient composition. This has been clarified in the EIS in Section 1.4.1.3.2.

Ltr#	Cmt#	Comment	Response
		because of changes in nutrient composition (see summary by IEP MAST 2015, p. 71-72).”]	
26	15	The net flow hypothesis is referred to at reverse flow above [Refers to page 1-10, Section 1.4.2.1 3rd paragraph, 3rd sentence; “Though the model has not been finalized, and no detailed model documentation of the Delta component has been of the Delta component has ben produced to date, findings provided in regular workshops indicate lack of support for the net flow hypothesis.”]	“Reverse flow” is the common term used to describe “net” tidally averaged flows going toward (rather than away from) the South Delta. The referenced use of the term appears to be appropriate.
26	16	Should acknowledge that Final PA is still within the range of alternatives analyzed here [Refers to page 1-12, Section 1.6, last sentence; “Alternative 1 is also the proposed action in the Biological Assessment that Reclamation submitted to USFWS and NMFS regarding long-term operation.”]	Please see Master Response 2, Related Regulatory Processes, regarding the Biological Assessment, and Master Response 4, Alternatives Formulation, regarding refinements to Alternative 1.
26	17	Confirm that all areas included—exchange contractors, trinity river etc. [Refers to Figure 2.3-1, study area map]	The study area includes the locations noted in the following bullets, and are show on Figure 2.3-1, Study Area Map. Trinity Reservoir and the Trinity River downstream of Lewiston; Sacramento River from Shasta Lake downstream to and including the Delta; Clear Creek from Whiskeytown Reservoir to its confluence with the Sacramento River; Feather River from the Federal Energy Regulatory Commission (FERC) boundary downstream to its confluence with the Sacramento River; American River from Folsom Reservoir downstream to its confluence with the Sacramento River; Stanislaus River from New Melones Reservoir to its confluence with the San Joaquin River; San Joaquin River from Friant Dam downstream to and including the Delta; San Francisco Bay and Suisun Marsh; Nearshore Pacific Ocean on the coast from Point Conception to Cape Falcon in Oregon; and Areas that receive water from the CVP or SWP.
26	18	Consider adding “as amended” [on page 3-2, Section 3.2.1, after the first sentence; “Reclamation and DWR would operate their respective facilities in accordance with the COA.”]	Text has been revised per comment.
26	19	Consider adding sentence: “During excess conditions, Reclamation and DWR are obligated to export and store as much water as possible within their	Text has been revised per comment.

Ltr#	Cmt#	Comment	Response
		physical and contractual limits.” [On page 3-2, Section 3.2.1, 2nd paragraph, fifth sentence; “In excess conditions, these percentages change to 60/40.”]	
26	20	Consider adding more detail regarding CVP allocation process, including additional detail on contractual deadlines for major allocation announcements. [to Section 3.2.4, page 3-3]	Please see Appendix D, Section 4.1.4 for more information regarding the CVP allocation and forecasting process.
26	21	Incomplete sentence [Refers to page 3-4, Section 3.3, 2nd full sentence on page; “For the purpose of the reinitiation process, because they are not included in the No Action Alternative.”]	Text has been clarified in this sentence
26	22	Appears to be incomplete [Refers to page 3.4, Selection 3.3.1, 2nd sentence; “water rights, contracts, and agreements specific to the upper Sacramento River include SWRCB Water Rights Decisions 990, 90-05, 91-01, and 1641; Settlement contracts; the exchange contract; and water service contracts.”]	Despite its complexity, this sentence is complete. No changes have been made.
26	23	Should be reviewed against discussion on p. 4-36 [Refers to page 3-11, Section 3.3.5, 4th sentence; “Under the No Action Alternative, Reclamation and DWR would continue to operate the CVP and SWP to meet the RPA requirements in the 2008 USFWS BO RPA Actions 1 through 3 and the 2009 NMFS BO RPA Action IV.2.3.”]	Reclamation reviewed page 4-26 and the discussion is consistent.
26	24	Need to evaluate references to lower Klamath FARs which suggest inclusion in Alternative 1. Should be reviewed and considered for consistency with discussion in other documents (BA, Bos, etc.).	Reclamation considered the ROD for the Long-term Plan to Protect Adult Salmon in the lower Klamath River Project and other applicable documents and Alternative 1 is consistent.
26	25	What about modifications to the action IV.2.1 from 2011 bip amendments such as—to make the second trigger focused on 8 fish/TAF rather than 12 TAF, etc.? See: https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf [Refers to Section 4.8.1.5—2009 NMFS Biological Opinion OMR Criteria, page 4-35]	The San Joaquin Inflow to Export Ratio required in 2009 Biological Opinion RPA Action IV.2.1. is replaced in Alternative 1 with OMR restrictions based on fish presence and cumulative and single-year loss thresholds, and effects of exports are analyzed in Section 5.9.1.7 of the Draft EIS. See also Section 1.4.2.1 of the Draft EIS. The daily loss of juvenile salmon in the facility is not clearly related to population level direct or indirect loss at the facility for OMR conditions less negative than -5000 OMR. These catches are sporadic and likely more indicative of behavior of fish present in the Delta, not a population level effect due to loss. The approach in the preferred alternative is to minimize the likelihood that loss will have a greater single year or cumulative effect than occurred during the recent BO period of 2009-2018, when operations and the loss resulting from it were considered to reduce impacts and minimize effects from the CVP/SWP diversions. The approach in the preferred alternative uses single year and cumulative loss percent exceedances to moderate loss due to

Ltr#	Cmt#	Comment	Response
			reverse OMR conditions during the period when fish are rearing and migrating through the South Delta
26	26	What is the role of O'Neill and Forebay? [Refers to page 4-44, Section 4.8.3, CVP and SWP Service Areas (South to Diamond Valley), 2nd Paragraph]	O'Neill Dam on San Luis Creek forms the O'Neill Forebay immediately downstream of San Luis Reservoir. The forebay connects directly with the California Aqueduct and with the Delta Mendota Canal via the O'Neill Pumping-Generating Plant. The O'Neill Forebay regulates inflow from these two sources so that it can be either pumped into San Luis Reservoir in periods when CVP and SWP supply is greater than demand or balanced with releases from San Luis Reservoir when demand is greater than the imported supply on the California Aqueduct and Delta Mendota Canal.
26	27	Could reductions in water supply lead to reduced farm activity and reduction in populations of farming communities? [Refers to page 5-1, Section 5.1.1.1, Population and Housing, 2nd paragraph]	Impacts associated with changes in land use, e.g. changes in irrigated agricultural acreage and changes in land use, are addressed in Section 5.12, Land Use and Agricultural Resources. As described in Section 5.1.1.1, the alternatives would not create additional housing, provide infrastructure to support additional population, or displace existing populations necessitating the creation of housing in another location. Therefore, it is not anticipated that the alternatives would result in either direct or indirect population growth as the result of operations-related activities.
26	28	Should there be decription in here about how the modeling in incorporating the OMR "triggers?" [Refers to page 5-3, Section 5.1.5, modeling methodology.]	OMR "triggers" are described in Appendix F, Modeling Attachment 2-1 Model Assumptions and Appendix F, Modeling Attachment 2-2 CalSim II Model Assumptions Callouts.
26	29	Are there maps/descriptions of these hydro-logic regions? [Refers to page 5-12, Section 5.3.1.2, CVP and SWP Service Areas]	Figure H.1.3 in Appendix H displays the CVP and SWP water users and the DWR hydrologic regions.
26	30	OID/SSJID et al? [Refers to page 5-13, Section 5.3.1.2.1, San Joaquin River Hydrologic Region]	Figure H.1.3 in Appendix H displays the CVP and SWP water users and the DWR hydrologic regions. Tables H.1-1 and H.1-2 in Appendix identify the CVP and SWP contractors by division (CVP) and area (SWP) and what hydrologic region they are located in.
26	31	CCWD? SCVWD? [Refers to page 5-14, Section 5.3.1.2.2, San Francisco Hydrologic Region]	Please see response to comment 26-30.
26	32	SLDMWA members? [Refers to page 5-16, Section 5.3.1.2.4, Tulare Lake Hydrologic Region]	Please see response to comment 26-30.
26	33	This is a process of also determining fallowing patterns and the cost and suitability of the groundwater quality for certain crops. [Refers to page 5-19, Section 5.4.1.1, Central Valley Region, 3rd paragraph; "In general, the amount	As stated in Section 5.4, Groundwater Resources, and Appendix I, Groundwater Technical Appendix, the CVHM model conservatively assumes that all agricultural surface demands that are not meet by surface water supplies

Ltr#	Cmt#	Comment	Response
		of groundwater pumped, especially for agriculture, is not measured and exported. With that in mind, CVHM estimate groundwater pumping as the difference between surface demand and the amount of other water (that is, surface water) delivered to that area. The model then assumes that the balance is pumped from groundwater to the meet demand.]	are pumped from groundwater. This is a conservative approach to identifying potential groundwater level impacts. The items noted by the commenter (fallowing, groundwater quality suitability) are part of the decision process when individuals identify potential water sources. These items would potentially result in less groundwater pumping (e.g., due to a decision to fallow or the lack of suitability of groundwater quality for irrigation).
26	34	These are in thousands of AF. So the range is 1M decrease to 650 TAF increase [Refers to page 5-20, Section 3.4.1.1, Central Valley Region;" Figure 5.4.1, change in Groundwater Pumping Resulting from Alternatives 1 through 4 compared to the No Action Alternative shows the annual change in the volume of groundwater pumping over the entire 42-year CVHM model simulation, ranging from a decrease of over 1,000 AF to an increase of about 650 AF."]	The commenter is correct. The units listed in the chapter text related to these pumping amounts were incorrect. The text has been corrected to read "TAF."
26	35	Would fallowing increase in an attempt to avoid continued lowering of water levels? "[Refers to page 5-21, Section 5.4.1.1, Central Valley Region, last sentence; "Groundwater pumping in Alternative 4 is expected to increase, resulting in decreased groundwater levels. The effects of Alternative 4 would need to be incorporated into GSPs for the area."]	See response to comment 26-33.
26	36	Increased surface water availability will reduce the amount of fallowing that is necessary to achieve sustainability. [Refers to page 5-26, Section 5.4.1.1, Central Valley Region, last sentences; "Land subsidence is a component of the GSPs that will be developed and adopted as required by the SGMA. Stable or increased groundwater levels will aid in the sustainable management of each groundwater as it pertains to the subsidence component of GSPs."]	See response to comment 26-33.
26	37	Would there be dust issues fallowing in Alternative 4? [Refers to page 5-32, Section 5.6, Air Quality].	If sufficient water for irrigation were not available, some growers might fallow a portion of their land. Fallowed land could contribute to emissions of fugitive dust. Growers could minimize dust emissions from fallowed land by implementing management practices in accordance with U.S. Department of Agriculture or local air quality management district guidance.
26	38	Does there need to be an analysis about that reduction in marketed hydro by the CVP/WAPA under increased umping scenarios? i.e. SMUD has to buy grid power to replace lost Base Resource. But under CA Rules it has to buy tablewares/low carbon. Legislation is being proposed to also require the SWP to address its shortfall with low carbon sources." [Refers to page 5-32, Section 5.6.1, Project-level Effects, 2nd paragraph, 4th sentence; "Under Alternatives 1,2 and 3, and although the CVP by itself would produce more power than it uses, the CVP and SWP combined would use more power than they produce. The SWP would purchase power from the regional electric system (the grid) to	It is not clear if the comment is referencing an economic issue (i.e., SMUD has to buy XX MW of power at $YY to offset the reduced net generation) or a supply issue (i.e., with an increased net usage, additional power is needed from other generation sources). In the case that it is an economic issue, the power and energy analysis did not cover economic effects of reductions in net generation, economic effects are evaluated separately in the document. In the case that it is a supply-related concern, the analysis is not suggesting a particular replacement source of energy; it could come from out-of-state imports, or from new in-state generation sources. Effects associated with the

Ltr#	Cmt#	Comment	Response
		meet the demand for power. To the extent that the additional purchased power would be generated by fossil fueled power plants, emissions from these plants would increase.”]	replacement energy sources would likely need to be evaluated as part of the decision process for either the CVP power customers or the SWP as they consider their options.
26	39	Should be moved up also included in 5.6.3. [Refers to page 5-42, Section 5.7.3, mitigation measures, first paragraph].	The text commented on is applicable to 5.7.3 (GHG mitigation measures) and accordingly has not been moved. The text commented on is already included in 5.6.3 (air quality mitigation measures).
26	40	Its difficult to see NAA. Looks like it tracks Alt 1. Clarification would be helpful. [Refers to figure 5.9.-5, modeled Average Flow in Clear Creek below Whiskeytown Dam for the period October-September, Average of all Water Year Types.]	The line for NAA average flow in Figure 5.9-5 is difficult to see because it is very similar to Alternative 1 average flow.
26	41	Its difficult to see the NAA. Looks like it tracks Alt 1. Clarification would be helpful. [Refers to page 5-44, Figure 5.9-6, modeled Average Flow in Clear Creek below Whiskeytown Dam for the Period October-September, Below normal Water Years.]	The line for NAA average flow in Figure 5.9-5 is difficult to see because it is very similar to Alternative 1 average flow.
26	42	Is there supposed to be a graph for September? [Refers to page 5-54, Figure 5.9-11. HEC-SQ Sacramento River Water Temperatures at Keswick Dam under the no Action Alternative, Alternative 1, Alternative 2, Alternative 3 and Alternative 4; October.]	The graph for September water temperatures at Keswick Dam can be found in Appendix O, *Aquatic Resources Technical Appendix.* It is Figure O.3-20 on Page O-201 of the appendix.
26	43	May be helpful to include a limited discussion on this Figure? [Refers to page 5-54, Figure 5.9-12. Exceedances of Winter-run Chinook Salmon Temperature-Dependent Egg Mortality, Alternative 1 vs. no-Action Alternative; All water year types]	A discussion of Figure 5.9-12 can be found in Appendix O, *Aquatic Resources Technical Appendix.* The discussion and corresponding graphs are on Pages O-216 through O-218 of the appendix.
26	44	Delete “=” [Refers to page 5-76, Section 5.9.2.3.7 Longfin Smelt—mid way through paragraph]	The edit was made in response to the comment.
26	45	Delete [Refers to word “action” at the end of second paragraph on page 5-78, Section 5.10.1, Project-Level Effects.]	The edit was made in response to the comment.
26	46	Confusing—A reduction (negative) in saving suggests an increase in costs [Refers to the 9th and 10th Rows of Table 5.11-1.m and 1 Water Supply Costs under the Action Alternatives Compares to the no Action Alternative, page 5-91]	Footnotes 9 and 10 to Table 5.11-1 have been revised to provide clarification.
26	47	Even under SGMA? More likely to increase food prices due to lower availability. [Refers to page 5-92, Section 5.11.1—Regional Economics, last sentence of 1st paragraph on page: “This could result in agricultural contractors increasing groundwater pumping.”]	See response to Comment 26-9.

Ltr#	Cmt#	Comment	Response
26	48	Would also mean lower prices for consumers too [Refers to page 5-92, Section 5.11.1, Regional Economics, last sentence of 2nd paragraph on page: "Consequently, operation costs associated with crop production would be lower and would result in increased profitability to growers."]	The commenter is suggesting a reduction in operation costs would result in substantial changes to crop prices. However, crop prices are dependent on several factors including global demand, income elasticities, and global market production. The scope of this project is not expected to change global prices of commodities. Therefore, the agricultural economics analysis in the EIS used fixed crop prices escalated and calculated for appropriate population and demand instead of the endogenous price model.
26	49	Not clear which region CV Ag SOD falls into… [Refers to Table 5.12.1. Change in Average Annual Water Supply Costs from no Action Alternative (thousands of dollars, 2018 value), page 5-96]	The Delta area (SWAP Region 9) falls within the Sacramento River region. Areas south of the Delta area fall within the San Joaquin River region.
26	50	Which is the export area? Please clarify. [Refers to rows 3 and 4 of Table 5.12.4. Change in Water Transfer Costs from no Action Alternative (thousands of dollars, 2018 value), page 5-99]	"Export area" is not a term used in this document. CVP water is provided to all regions other than the Trinity River region
26	51	Perhaps speculative, but seems likely to be true if available capacity across Delta is lower because projects are moving more contracted water. [Refers to page 5-101, Section 5.12.2. Program-level Effects. Last paragraph on page, 2nd sentence: "Because CVP and SWP flows are anticipated to increase under Alternatives 1,2, and 3, it is unlikely that water transfers would increase. This conclusion is, however, speculative."]	The commenter agrees with the Draft EIS suggestion that water transfers are not likely to increase under Alternatives 1, 2, and 3, while speculative. Water transfers are complicated and rely on a range of factors, including but not limited to water availability, weather, water costs, and human decision. It is appropriate to state that this suggestion is speculative and to refrain from making a stronger claim.
26	52	What about the costs associated with these measures? [Refers to page 5-102, Section 5.12.3 mitigation measures, paragraph below bullets, 3rd and 4th sentences; "Implementation of mitigation measure AG-1 could reduce effects by encouraging water agencies to diversify their water portfolios, thus increasing the likelihood that water users would have adequate water in years with the actions. Mitigation measure AG-2 could reduce effects by encouraging agencies with discretionary land approval powers to require land or conservation easements or in-lieu fees to mitigate for conversion of agricultural land."]	Costs for implementing Mitigation Measure AG-1 could range widely and could involve different parties responsible for costs, including but not limited to agency or commercial costs for building percolation ponds for recharge of aquifers; agency or commercial costs for constructing desalination plants; requiring on-farm water efficiency measures financed by landowners; and improving effectiveness of conjunctive use, financed either by agencies or landowners. Costs for implementing Mitigation Measure AG-2 could also vary widely, including administrative costs involving changes in policy and possibly legal costs, depending on the mechanism used to change policy.
26	53	Are these two graphs the same? Is there a difference between the two? [Refers to page 5-104, Figure 5.13.1. Shasta Lake Elevation Changes, Average during Above normal Year Type]	The duplicate figure has been removed in response to your comment.
26	54	Are these two graphs the same? Is there a difference between the two? [Refers to the page 5-105, Figure 5.13-2. Sacramento River Flows Downstream of Keswick Reservoir, Average during Above normal Year Type.]	The duplicate figure has been removed in response to your comment.

Ltr#	Cmt#	Comment	Response
26	55	Delete [Refers to “changes river flows, reservoir levels, and in last paragraph on page 5-115, Section 5.18.1. Section 106 of the Natural Historic Preservation Act.]	The text has been deleted in response to your comment.

Ltr#	Cmt#	Comment	Response
27	1	Hi. My name is Conrad Fisher on behalf of Water Climate Trust. My grandparents on my mother's side came to Redding to work on the Trinity River Project on the Shasta Dam, and my grandparents on the other side were living on the Trinity at the time when -- as a result of the twin tunnels that take water out of the Trinity basin and -- was completed. And the Trinity became -- a lot of its life was sucked out. The people were incredibly sad. It was in my grandmother's words worse than, for a lot of the people, losing a child and the river has not recovered and today we're talking about diverting more water. So the law we all know -- EIS says we're not supposed to essentially get the critters off the list, not to keep a few around. What that means is never completely defined by science, but I would ask that the feds stop this negotiation with bare minimum of what California already says we need, and instead we need to provide flows that would provide a high probability of recovery. We will never know until we try it and until the fish actually recover. And money does not substitute for water. There are a lot of good things money can do but flow is critical. The range of alternatives should include the elimination of waste and unreasonable use of water, and that is required by the California Constitution but not necessarily binding on you but just a couple of examples.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. As described in Section 3.7.9, Alternative 4 includes water use efficiency measures, above current and proposed practices, for both agricultural and municipal and industrial CVP and SWP contractors, analyzed at a programmatic level. Both the CVP and SWP also are operated to address multiple beneficial uses; requirements of which are established in water quality control plans administered by the State Water Resource Control Board. The alternatives considered all provide protection for aquatic species in compliance with ESA obligations.
27	2	My family in Redding has the right to flood, irrigate a whole lot of land for a few pet cows. I have the legal right to flood, irrigate a second home in the upper Sacramento watershed for a bunch lawn. These things are ridiculous the fact that I have this right, and we should not be talking about how much water to take from salmon when they're in the verge of extinction at a time when this amount of waste is there. It's shameful for our current generation to be doing that to future generations.	Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.
27	3	The project doesn't include impacted areas, the map you showed and it should, so I would just -- I would just ask that we consider our ethical and legal obligations in this particular case and our disparate and intent of the California Reasonable Ease Doctrine. And I think it's important that we in all of our positions, whether it be the Federal Government or State recognized, when	The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The proposed project is consistent with the mission of the Bureau of Reclamation and is in the public interest.

Ltr#	Cmt#	Comment	Response
		people are talking to us, why are they talking to us. Is it for the public interest, is it for future generations, or is it to add another million dollars to the bottom line of somebody who is already rich? And that is -- when it comes right down to it, that's what it's about. Thank you.	Please see Master Response 1, Response to General Comments, for additional discussion of the project's purpose and need.

Ltr#	Cmt#	Comment	Response
28	1	So Reclamation -- Deirdre Des Jardins with California Water Research. So Reclamation was directed to maximize water deliveries. But there is an issue that if the reservoirs are operating more aggressively, it increases shortages and drying in critically dry years because you've delivered all the water in the previous year. And this has very real economic impacts in the San Joaquin Valley. There's a lot of more permanent crops and has very real economic impacts in terms of shortages of water for those growers. And I don't see an analysis of that in the EIS. I don't see you looking at the trade-offs, but there's very real trade-offs. It makes sense to maximize water deliveries if you're planting cotton or other annual crops but we're not. So I don't see that in the EIS, and it's -- it's a very large issue. Thank you.	Thank you for taking the time to participate in the Reinitiation of Consultation for the Coordinated Long-term Operation of the CVP and SWP Draft EIS Public Meetings. CalSIM II was used to model water supply deliveries under conditions for each of the alternatives. For all alternatives except Alternative 4, under both average and dry/critical water years, agricultural water deliveries increased over the No Action Alternative. This analysis was provided in the Appendix R of the Draft EIS for most regions and most alternatives. However, the analysis was inadvertently omitted for some regions. Therefore, the following text was added as indicated for Alternatives 1, 2, and 3 to indicate no effect is anticipated on agricultural land. Project-Level Effects, Alternative 1, Sacramento River Region, San Joaquin River Region, Bay-Delta Region; Alternative 2, Sacramento River Region, Bay-Delta Region; Alternative 3, Sacramento River Region, San Joaquin River Region, Bay-Delta Region, Southern California Region: As shown by CalSim modeling (Tables R.2-1 and R.2-2), deliveries for agricultural uses would increase under the average and dry/critical conditions in this region, so no conversion of agricultural land to nonagricultural use is anticipated. In addition, the following text was added as indicated for Alternative 4 to indicate an effect on agricultural land is possible. Sacramento River Region, San Joaquin River Region, Bay-Delta Region, Southern California Region: As shown by CalSim II modeling (Tables R.2-1 and R.2-2), deliveries for agricultural uses would decrease slightly under the average and dry/critical conditions in this region. Accordingly, there could be some conversion of agricultural land to nonagricultural use under Alternative 4. Implementation of Mitigation Measure AG-1 would reduce this effect by encouraging water users to develop alternative sources of water.

Ltr#	Cmt#	Comment	Response
29	1	Good afternoon. Thank you for allowing us to speak. I must pray because we're talking about the blood of life, the body of water. I've just come from the big island, and the telescope is not necessarily about the telescope. It's about the body of water, the contamination of it. The template that you guys are setting the stage for with this action of using this water to the best you can, there's a mirror imagine of our Sacramento Valley in China. It's called the Onvo (phonetic) Valley and Onvo is the urban capital of the world where our medicine comes from. That river is dry now. The city of Beijing has 23 million people that drink out of bottled water. You guys are setting the template for that.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.
29	2	You mentioned new science. Science I would tell you that for 60 years or 50 years of being in federal meetings is only as good as who has paid for it. Okay. So just remember that you have forgotten that native truth of the native voice.	Please refer to comment response 29-1.
29	3	And the thing is there's a baseline of what's called public trust of water, and the people of Northern California -- I drill a well to get my own water as most of you in Northern California do. That water has not been accounted for me, nor has the water been accounted for our brothers and sisters, the salmon and other animals. I must pray.	Please see Master Response 1, Responses to General Comments, for a discussion regarding public trust resources.
29	4	Comment 4 What I asked is -- to give these proceedings I asked all our elders, all the people from the sky to look over these proceedings with knowledge, with wisdom, and with honor, power. And then I said a Miwok prayer that says, (Speaking in Miwok), from this land and the people right here and that says, we need clean, clear river water. This plan has already been templated in china 200 years ago. This is where we will be. Save the water, okay, and save our brothers and sisters. That is our resource that we're saving. It's not to allow the manipulation by corporate people for profit. This is our water. Those fish are for you. That is the protein for your lives to feed our kay-kay, our children. Please be conscious, hold our hearts together. We are on. Please, for God's sake, do not let this man come over and manipulate billions of dollars that has been spent on payroll to find a plan for California, and now we're going to change it in one fell sweep. Come on. And another thing, there is no water in the native community. Mahalo. Bless the lord, bless the spirit, and please love our mother and father, Lahaina. My	For information on the anticipated water quality effects of the project please see Appendix G, Water Quality. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.

Ltr#	Cmt#	Comment	Response
		name is Tyrone Gorre, and I represent Public Trust and I represent the Sierra Salmon Alliance. Thank you.	

Ltr#	Cmt#	Comment	Response
30	1	From one meeting to the other of water in California is pretty exhausting. As you might well know, this is, you know, the second meeting today about water and convenience of water and distribution of water to the State of California. But for us, the Winnemem Wintu Tribe, we've been here since you guys started this, since before the Shasta dam was built, and water conveyance was dreamed of and started to be exported. We've been here through that whole time, and, you know, we have lost every step of the way. We've lost all of our land. We have no land on the McCloud River even though promised by the 1941 Act that was passed to take our land and give us land in return but this -- none of the administrations, should I say, have been able to correct that or just bring justice to that fact. They have also blocked all of our salmon from going home. We're a people who believe whatever happens to the salmon happens to us. All of our salmon lost their homes on the McCloud River, so did all of the Winnemem Wintu people. We lost our homes on the McCloud River. So the promises need to be addressed. The salmon restoration projects that we're fighting for against the Bureau of Reclamation and with the Bureau of Reclamation to bring salmon above the dams even though they say that's not a conflict of interest. The salmon project part of it has been stalled out now in lieu of the building of Shasta Dam a little bit higher for the water export project that's being planned right now. I just want to say we need to rethink this.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS. Please also see Master Response 4, Alternatives Formulation regarding the range of alternatives evaluated. Please see Appendix D for a detailed discussion regarding the alternative components that were screened out. The Shasta Lake Water Resources Investigation (Shasta Dam Raise Project) is appropriately considered in the cumulative effects analysis found in Section 5.10, Cumulative Effects, of the EIS. The specific elements of the Shasta Lake Water Resources Investigation are beyond the scope of this EIS. Alternatives considered in the SLWRI EIS include project components to improve conditions for anadromous fish species downstream of Shasta Dam while enhancing water supply reliability. Mitigation Measure Culture-2 would reduce effects from reservoir inundation by avoiding, minimizing or reducing through project design, when warranted, or through the development and implementation of an MOA or Programmatic Agreement.
30	2	The State of California -- we should be a salmon state. We should not be a GMO farming state in the desert. We are built to be a salmon state. We have the largest running rivers. We have the coldest water coming out of this -- this mountain. We have the largest estuary on the Pacific Coast. We used to be a salmon state until somebody got the bright idea to divert water, and then they finally figured out why the salmon was dying because they diverted so much water. But they can't stop diverting the water now, and they can't move the pumps to the appropriate place if they're going to divert the water. And so we have a number of problems that they say are too expensive to address. But is this not too expensive? This water project it's not too expensive? It seems to be, but we should be the salmon state.	Please see response to comment 30-1.
30	3	This action to me is a continuance of the culture genocide placed on the Winnemem Wintu people. We are near extinction also. So the treatment of the	To the extent commenters claim the right to land or compensation under the Treaty of Cottonwood Creek and the Act of July 30, 1941, 55 Stat. 612, the

Ltr#	Cmt#	Comment	Response
		Winnemem people is a national disgrace. When -- when the government steps in to do these things, then they need to also correct what they have already done.	rights of any and all Indian tribes and allottees to property withdrawn for the purpose of creating Shasta Dam and Reservoir were extinguished. Section 1 of the Act "granted to the United States . . . all the right, title, and interest of the Indians in and to the tribal and allotted lands within the area embraced by the Central Valley project." To the extent any commenter seeks compensation for that transfer (and the inundation created by Shasta Dam) or a declaration that any such land remains tribal or allotted land, the ROC on LTO process is not the proper forum to seek redress. Further, Reclamation is unaware of any Indian lands, whether tribal or allotted land, that will be inundated by any of the alternatives but were not previously transferred to the United States under the 1941 Act.
30	4	And, you know, we've got to clean up those waters. They're all contaminated. Stop fighting over contaminated water. Clean it up.	For information on the anticipated water quality effects of the project please see Appendix G, Water Quality. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.

Ltr#	Cmt#	Comment	Response
31	1	Okay. So this whole project that you guys are doing doesn't appear that you have done anything with the initial meeting -- in -- in Redding about the comments that we made about the fish, about the passage. I don't see any fish passage in this project, and you have made decisions based on this new science, not even to include the fish passage when the 2008 was based on the science for fish passage. So somehow this new science has already dropped off, the fish passage idea, for some reason	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. As documented in Appendix D Table 3.2-1, the project retained the component of rescuing adults stranded in locations without adequate fish passage in Alternatives 1 and 3.
31	2	So I just want to also bring up the 1941 Act of Congress for the CVP in taking the Winnemem Wintu land for this dam needs to be addressed. We need a meeting about what you guys took because you never paid for it. You never gave us the land, you never put us on the list, you never did anything on that Act of Congress. So the Winnemem Wintu Tribe is requesting a meeting with you guys or whoever the heads are who actually can make a decision about that loss because we are now three generations into having nothing from this water project, and now, you know, you're -- you're taking away the only hope we had of fish passage, of salmon coming back to the McCloud river.	Under the Treaty of Cottonwood Creek and the Act of July 30, 1941, 55 Stat. 612, the rights of any and all Indian tribes and allottees to property withdrawn for the purpose of creating Shasta Dam and Reservoir were extinguished. Section 1 of the Act "granted to the United States . . . all the right, title, and interest of the Indians in and to the tribal and allotted lands within the area embraced by the Central Valley project." To the extent any commenter seeks compensation for that transfer (and the inundation created by Shasta Dam) or a declaration that any such land remains tribal or allotted land, the ROC on LTO process is not the proper forum to seek redress. Further, Reclamation is unaware of any Indian lands, whether tribal or allotted land, that will be

Ltr#	Cmt#	Comment	Response
			inundated by any of the alternatives but were not previously transferred to the United States under the 1941 Act.
31	3	Now, you're capitalizing on new scientists that Trump put in to charge that, and you're already ahead of schedule because they're not even going to tell you that's an issue until next month, but you've already dropped it, like you already know it's not going to happen. What is that about?	Please see Master Response 1, Responses to General Comments regarding Alternative 1 and the process for selecting an alternative once the environmental review has been completed.
31	4	So the Winnemem Wintu have water rights we need to talk about. We need to have that in our meeting with you. We have land and cultural rights that we need to do something about. We need to do some science on what you've done to this tribe. You need to do some history on what you've done to this tribe, and what are you going to do now to do this because in 1941 we were promised fish. Livingston Stone said, "We don't need no fish passage because we can produce enough salmon in hatcheries to do the job." Now we know that's not true. They're on the decline. They're on the endangered species list. You're going to give them the exact same thing that they've had all of these 16 years, more water, more -- in the river, but no fish passage 17 to the real cold water pools that they need for survival.	The proposed changes in operations have three principal objectives: (1) provide enough cold water to optimize survival of the current year's Winter-Run Chinook Salmon eggs and alevins, (2) stabilize water levels through the fall to avoid dewatering redds and stranding juveniles of Winter-Run Chinook Salmon and other salmonids, and (3) conserve and rebuild Shasta Lake storage in the fall and winter to provide the cold water pool resources needed to optimize survival of the next year's Winter-Run Chinook Salmon eggs and alevins. Native American groups would benefit from these spawning improvements. Please see Appendix O, Fish and Aquatic Resources, for a complete discussion of the effects of the project alternatives on salmonid resources of the Sacramento River.
31	5	The buy-op of 2008 and '9, I don't know how you guys can get by and do something separate from that, but I understand that DWR is involved and CEQA 8052 have not been put into action here for this DIR, DIS, whatever you want and for the -- when will that happen since DWR is – you should be consulting with us. The DWR should be consulting with us about this project, and I'm halfway through my comments because we have four more people to talk.	Please see Master Response 2, Related Regulatory Processes, for information about the development of the biological assessment and biological opinions, and their relationship to the EIS.

Ltr#	Cmt#	Comment	Response
32	1	My name is James Brobeck. I'm the with water policy, AquAlliance. The purpose of this project is to maximize water deliveries, which will minimize fish and wildlife priorities. On page 31 of your DEIS you admit that the Central Valley Project Improvement Act requires that fish and wildlife protection and restoration have equal priority with irrigation domestic supply. Alternatives one through three plan on increasing water deliveries even while fisheries in the great Central Valley are collapsing. On page 32 of your DEIS you lay the blame for not meeting Central Valley fish and wildlife priorities on the Hoopa Valley Tribe fishery protections that require leaving water -- river.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, regarding the purpose and need and CVPIA. Please see Master Response 2, Related Regulatory Processes regarding the regulatory processes needed for obtaining required approvals.

Ltr#	Cmt#	Comment	Response
		Furthermore, you blame the weather for everything. You blame sea level rise. You blame predation. You blame ecosystem changes caused by nonnative species.	
32	2	The DES fails on page 32 to include unreasonable water demands as a factor in the collapse of the native fish population. Reclamation meets its obligations to deliver water via CVP and the California DWR persists in delivering water via SWP either during critically dry periods by minimizing temperature control efforts in the Sacramento river and by obtaining illegal temperature protections that violate water quality standards in the Delta. These routine management failures are not considered in the Draft study but need to be addressed.	Regulation of water demand is beyond the scope of the EIS. Water supply delivered to CVP contractors are based on water rights, contracts and available water supply in a given year. Please see Master Response 1, Responses to General Comments regarding the relationship of the proposed project to the California State Water Resources Control Board's ongoing process to update the Bay-Delta Water Quality Control Plan.
32	3	Since south of Delta exports depend on the Sacramento river influence, where will the increased water come from during drought years. The Sacramento hydrology clearly shows that 56 percent of the years are dry years. Some of the driest can barely support -- in the Sacramento Valley with very small allowances for Delta outflow.	The EIS describes project operations under the different alternatives and water year types in Chapter 3, summarizes the anticipated effect of those alternatives on water supply for the water users whose supplies would be affected in Chapter 5 and describes in detail these anticipated changes in Appendices F and H. The effects of water supply operations for varying water year types, including dry year types, is estimated using the CALSIM II model and the effects of these changes are presented for water quality (Section 5.2) and Aquatic Resources (Section 5.9) among other resources dependent on operational changes. Please see Master Response 6, Hydrological Modeling and Surface Supplies, for a discussion regarding modeling limitations and extreme conditions.
32	4	The DEIS fails to address the consequence of declining Sacramento Valley ground water levels indicated by persistent dry -- Glenn County, areas in the Chico and Butte County, Northern Sacramento -- if conjunctive water use is considered in any part of this project or its alternatives. The DEIS must identify areas where communities, farms, residential wells, and ground water dependent ecosystems may be impacted by conjunctive water use.	The groundwater model used to evaluate impacts to groundwater levels simulates conditions throughout the Central Valley, including northern California. This model simulates conditions through multiple hydrologic conditions including drier and wetter periods. Table I.2-1 lists the water year types that are simulated in the model. The following figures show the simulated change in groundwater elevation in the Sacramento Valley due to each of the four action alternatives during Dry and Critical Dry year types. • Alternative 1 Figures I.2-53 (dry) and I.2-54 (critical dry) • Alternative 2 Figures I.2-58 (dry) and I.2-59 (critical dry) • Alternative 3 Figures I.2-63 (dry) and I.2-64 (critical dry) • Alternative 4 Figures I.2-68 (dry) and I.2-69 (critical dry) Each of these figures show a groundwater decline of 2 feet or less across the Sacramento Valley for each of the Action Alternatives versus the No Action Alternative. Therefore no potential adverse effects are anticipated.

Ltr#	Cmt#	Comment	Response
32	5	On page 137 you admit that, quote, for most constituents and constituent groups are concerned that water quality within the San Francisco Bay under the action alternatives would not differ substantially from the no action alternative. This DEIS focuses on the impacts upstream from the Bay and ignores how the altered and reduced flows have negatively impacted the fish, the wildlife, the shrinking beaches and marshes of the south, as well as the ocean ecosystem that has endured many droughts for millennia prior to the developed water supply that this DEIS is considering ramping up. Water falling into the ocean sustains California's greatest aquatic ecosystem, the Central Valley watersheds, Delta, Bay, and beyond.	Section 5.2.1.3 Bay –Delta describes the potential impacts associated each alternative on water quality in the Delta region. Furthermore, Appendix G, Water Quality Technical Appendix provides the technical analysis which supports the impact analysis provided in Chapter 5.

Ltr#	Cmt#	Comment	Response
34	1	I can't come to you and speak in the language of monetary value for water. It's not in my vocabulary. I tried to study this. I go to school. I try to understand both languages, you know, but what's speaking to me very clearly is that this is a grave decision. And that bottle over there that I pound on is empty, and that is what's going to happen when I see that map. The decisions that we make to choose to push a living being down to another area that it does not belong to, grave decision. So I'm saying this and I'm coming here today because I want to express the intensity of cause and effect, karma. We've heard of karma actions. I really, really, highly encourage to invite indigenous voices to the table when making these decisions. It's not about you. It's not about us. It's not about them. It's not about who versus who. It's about water. If she leaves us, we know. So I just -- I thank you for being here, and I just know that if we come together and keep -- keep our hearts together as humanity, and water one of the oldest organizations here, that we can make the right choices.Okay.	Thank you for taking the time to participate in the Reinitiation of Consultation on the Coordinated Long-term Operation of the CVP and SWP. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.
34	2	I can't talk in scientific terms because I have other friends who are very good at that, and I can't talk in monetary terms because I've said enough about this stuff. But what I do know is that the water is speaking through my ancestors, and that's why I'm here today. It is absolutely important that we make big decisions, not just to feed our own family but to feed the whole world, and that means we have to keep water where it belongs. Thank you so much for being here, and I look forward to working with all of you. And I know that we will make the right decision for our watershed. Thank you.	Please refer to comment response 34-1.

Ltr#	Cmt#	Comment	Response
35	1	My name is Barbara. I lead an organization called AquAlliance. We submitted comments, the scoping comments, and I noticed they were ignored, so I will go over some of the comments that we already tried to encourage you to incorporate in your process. For alternatives you need to -- to figure out how to do something that is not just squeezing more water from a collapsing system. And we suggested that you analyze a watershed rehabilitation as a storage project. The decreased demand alternative is something that is -- I have yet to see considered by you or your sister agency, DWR. Demand is what's driving your project, and the administration is putting pressure on you, and it is an unrealistic vision to think that you can get more water out of the system that's already collapsing and have anything left in the end.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS Public Meeting. Multiple watershed management components were evaluated in the alternatives screening process. The specific watershed management components were screened out for various reasons, see Chapter 3, Table 3.1-1 Component Screening Table. Overall, watershed rehabilitation is not part of the project scope as an operational change to the CVP and SWP to improve flexibility in maximizing water deliveries and managing listed species. As described in Section 3.7.9, Alternative 4 includes water use efficiency measures, above current and proposed practices, for both agricultural and municipal and industrial CVP and SWP contractors, analyzed at a programmatic level.
35	2	You also need to acknowledge and incorporate into the project and an EIS that California Water Code 85021 requires that all regions in California reduce their dependence on water from the Delta. This project does not acknowledge that, and you do have a state agency that is theoretically working with you. We believe you need to follow this law, and that is not a problem.	Please see Master Response 1, Responses to General Comments, for a discussion regarding the applicability of California state policies to Federal agencies.
35	3	Your own document trivializes what has happened to the fish. On page 2-2 under your purpose and need, you state as though it is just a foregone conclusion that the fish are going to collapse and that you have no control over anything and we know that that's false. We saw in 2014 and 2015 when you continued to get your requirements waived under -- by the State Water Board during the drought, and this is the result that we have from your operations. You and the DWR have caused the fish to collapse in the state. You have legal requirements and targets to reach, almost 1 million fish in production. You don't get anywhere near that since 1992. I would like this submitted in the record. We've will also submitted written comments, but there are gaping holes in this document that must be rectified.	Please see Master Response 1, Responses to General Comments, regarding the purpose and need and CVPIA Nothing in Section 2.2. states or implies that “it is just a foregone conclusion that the fish are going to collapse.” Section 2.1 clearly states that “California native fishes have declined and are likely to continue to decline because of stressors such as long-term meteorological variability, sea level rise, extreme weather events, predation, and ecosystem changes caused by nonnative species. Reclamation requested reinitiation of consultation based on new information based on multiple years of drought, monitoring of listed fish populations, and new information available as a result of ongoing scientific processes.” Please see Master Response 2, Related Regulatory Processes for a discussion on the process for obtaining the Biological Opinions from the regulatory agencies necessary for the implementation of the proposed action. To the extent the comment refers to the fish doubling goal included in the CVPIA, the Alternative 1 does not change Reclamations’ existing requirements under CVPIA.
35	4	ATT1: Graph shows estimated number of all races of adult chinook 1952-2016	The commenter provided this attachment in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

Ltr#	Cmt#	Comment	Response
36	1	Hello. My name is Regina Chichizola. I live on the McCloud River, and I also work on salmon issues throughout California. I work for commercial fishermen with the -- Fisherman Association, and I work with the tribes. I have two jobs, both of them on salmon. I would like to say that I'm very concerned about this project. I think that California salmon are already suffering in a major way. During the drought about 95 percent of the Winnemem salmon died in the Sacramento River due to temperature issues and also many of the juvenile salmon died in the Klamath River during that same time. And this plan is going to hurt both the salmon on the Klamath River through the Trinity River influence and the salmon on the Sacramento River and within the Bay, Delta, and in other tributaries of the Sacramento River and Bay, Delta.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS. Refer to Master Response 7, Aquatic Resources, regarding general comments on impacts of project actions on salmonids. Evaluation of potential impacts on salmonids that could result from Project actions are described in Appendix O, Aquatic Resources, Section O.3, Evaluation of Alternatives, and in Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources.
36	2	The reports I've seen said something like 20 percent more water will be delivered to -- will -- water deliveries will be increased by about 20 percent from this plan. I've also seen that there will not be releases of water to keep the Delta smelt alive within the Delta any longer, that those releases that make it so that the Delta is less salty will not happen any longer.	Information related to potential changes in water supply as a result of the alternatives is provided in Section 5.2 and Appendix H of the DEIS. With respect to Delta Smelt, the alternatives include various criteria for Delta outflow; see Chapter 3, Alternatives, of the EIS for a summary. Operation of the CVP will also continue to be subject to water quality requirements in the Bay Delta Water Quality Control Plan.
36	3	I've seen that the carryover storage for both the Shasta and Trinity Rivers are not protected as part of this plan, and that the temperatures will be impacted. I'm especially concerned about spring chinook salmon in the Sacramento River and fall salmon within the Klamath River. And the reason I'm concerned about the false -- Klamath River is because this plan will make it so temperatures are higher within the Trinity River during certain late summer and fall months, especially during drought years. August and November I think are the months that they said that there'd be higher temperatures in the Trinity River. And within what I read it said, "Well, this isn't really that big of a deal because water releases don't impact the lower Trinity River that much." When it in realty Loose End River (phonetic) -- Trinity River, Loose End River releases are used to keep large scale fish kills from happening in the Klamath River, and the Klamath River had a fish kill of about at least 60,000 fish in 2002. And ever since then, we've been able to do these emergency releases from the Trinity River of cold water. And that's because we're going to have enough carryover so -- Trinity River and we have good temperatures within the fall. And I'm concerned that this plan does not protect those releases, and I'm also concerned that it doesn't protect temperatures or carryover storage within the Trinity River and Sacramento.	In 2017, Reclamation released the Record of Decision and final EIS for the Long-Term Plan to Protect Adult Salmon in the lower Klamath River (LTP; Reclamation 2017), which identified a process and criteria for Reclamation to provide supplemental flow releases from mid-August to late September from Lewiston Dam to prevent an episodic disease outbreak in adult salmon in the lower Klamath River in years when stream flow is projected to be less than 2,800 cfs. As described in Chapter 3, Alternatives, this program would be implemented under each of the Alternatives under consideration in this EIS, as described in Chapter 3, Alternatives. Specifically, these supplemental flows, which would come from water stored in Trinity Lake, are aimed at minimizing one or more of the factors (e.g., high water temperatures, fish crowding, low flow) that contribute to high incidence of fish disease transmission [most notably Ichthyophthirius multifilis (Ich) and Flavobacter columnare (Columnaris)] and potentially lead to pre-spawning mortality of adult salmon. Current understanding of fish disease processes in the lower Klamath River based on best available science is detailed in Chapter 7 of the Draft EIS (Reclamation 2016). The three components of lower Klamath River flow augmentation specified by the LTP include:

Ltr#	Cmt#	Comment	Response
			(1) A preventative base-flow release of up to 40 TAF from Lewiston Dam over the course of approximately 30 days, beginning on or about August 23 and continuing until late September, with the intent of meeting and/or maintaining a target of up to 2,800 cfs in the lower Klamath River to improve environmental conditions; (2) A preventative pulse flow release of up to 10 TAF over 4 days to achieve a peak of 5,000 cfs in the lower Klamath River to be used as a secondary measure to alleviate continued poor environmental conditions and signs of Ich infection; and (3) An emergency pulse flow release of up to 34 TAF from Lewiston Dam over no more than 8 days, beginning on or about September 20 to meet a target of 5,000 cfs in the lower Klamath River, which would be used as a tertiary treatment to avoid a significant die-off of adult salmon when the first two components are not successful. The flow augmentation criteria specified in the LTP are intended to be implemented through an adaptive management process. The 2,800 cfs target for the preventative base-flow and 5,000 cfs target for the preventative pulse flow and emergency pulse flow augmentations are used for planning estimates and may be adjusted if real-time observations or changes in understanding of disease suggest that these flows are of a higher magnitude than that required to prevent a fish kill. Adaptive management of flow criteria over time based on prescribed monitoring and ongoing research will allow Reclamation to refine the water volume needed to achieve the goals of the plan while minimizing potential effects on water supply and the cold water pool in Trinity Lake. Implementation of the flow augmentation components and the volume of additional flows released from Lewiston Dam to the Trinity River under the LTP would vary by water year, depending on monitoring of the following factors in the lower Klamath River: real-time summer flow and water temperatures, density of adult salmon, and presence and severity of Ich infections in adult salmon. Based on these factors and in coordination with Federal, State, and Tribal resources specialists (i.e., LTP Technical Team), Reclamation would implement the flow augmentation components and required quantities to achieve LTP objectives. Water operations modelling for the LTP DEIS predicted that the preventative base-flow augmentation component would have been implemented in 71% of the years between 2002 and 2015 based on conditions in those years (Reclamation 2016). Modelling predicted that the secondary preventative and

Ltr#	Cmt#	Comment	Response
			tertiary emergency pulse flow components would have been implemented in 40% and 20% of those years, respectively, when the preventative base-flow was implemented (Reclamation 2016).
36	4	So I guess my time is up, but I have a lot more concerns than that. I think this plan is terrible, and I really hope that California fights back and doesn't let it happen. And I really think the Bureau of Reclamation needs to get tribal trustees to look at the economy in California and notice that it's not just water -- everyone in this state, and they're not the only people that are concerned. California depends on good clean water and salmon. Thank you.	Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.

Ltr#	Cmt#	Comment	Response
37	1	Hi. I'm Grant Gilkison. I'm -- I'm -- I'm from the village of -- and my sons and I traveled from -- my sons and I traveled here to let you know our -- our lives, our culture, their future depends on these salmon. We're kind people, and when we don't have salmon, it affects everything that we do as far as ceremony, what we're teaching our children. We went for one whole year without eating salmon as a collective group so that the salmon could recover. We take care of salmon. The salmon takes care of us, and we're here today to make sure that they're represented. These cold water releases are what -- and will continue to save the salmon if they're not -- if their releases don't happen, it has and will happen again and it's devastating to our people. It's devastating to the community, and it's devastating to the economy and everything -- where we live when this happens. It's -- it's very sad. It's losing part of our family. And so we come here today to let you know that this is very important to us, to our people, that these releases continue to happen to save these -- what's left of our fish. Thank you.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS Public Meeting. Please see Chapter 3, Alternatives, and Section 3.4, Alternative 1, for description of Project actions related to Coldwater Pool management and water releases.

Ltr#	Cmt#	Comment	Response
38	1	Flood control protects our communities here dependent on the operations, reservoirs. We've got to balance that with -- with the needs of -- for our generation, for the water supply, regeneration, and also the environment. And I will point out that significant investments have been made, acknowledgments, documents, decisions made both going forward and the past and speak to our own project, partnership and reclamation, to remove the impediment, to help the fishery resource -- project to put fish -- Red Bluff, huge benefits, and opened up a lot of important habitats for fish.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS Public Meeting. Please refer to Master Response 1, Responses to General Comments, for responses to general comments on the EIS.

Ltr#	Cmt#	Comment	Response
38	2	I also want to talk a bit about the -- our local economies. Look around here. Folks are driving up here from Sacramento, from other places. It's driven by agriculture, that is our farms here, our factories, you know. We grow food that feeds the world, and that takes water. I represent 17 water districts, a 150,000 acres -- during droughts we've suffered as well.	Appendix Q, Regional Economics Technical Appendix discusses potential agriculture-related changes to the regional economy. Under Alternatives 1, 2 and 3, there would be an overall increase in agricultural water supply that would be beneficial to the regional economy, as discussed in Sections Q.2.3, Q.2.4, and Q.2.5. Under Alternative 4, there would be an overall decrease in agricultural water supply that would be detrimental to regional economy, as discussed in Section Q.2.6. Please see Appendix F, Attachment 1 for additional information on the modeling sensitivity analysis.

Ltr#	Cmt#	Comment	Response
39	1	We [Pacific Coast Federation of Fishermen's Association, Save California's Salmon, Institute for Fisheries Resources] have reviewed the draft Environmental Impact Statement (DEIS) on the "Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project" released in July 2019. We find that the DEIS and Biological Assessment (BA) do not accurately or sufficiently assess the impacts to Trinity River fishery resources, specifically Southern Oregon/Northern California (SONCC) Coho Salmon, as well as other fishery resources that support dependent Tribal, commercial and recreational fisheries. While the operation of the Trinity River Division of the CVP is included in the analysis as a water source, the BA and Biological Opinion do not include reconsultation or any Reasonable and Prudent Alternatives or mitigation measures to protect the Trinity River and its coho salmon. Therefore, the DEIS should be withdrawn and a supplemental DEIS should be recirculated for public comment and review along with the final Biological Opinion that includes consultation for the Trinity River.	Please see Master Response 7, Aquatic Resources, regarding the sufficiently of the aquatics analysis in the EIS. Please see Master Response 2, Related Regulatory Processes regarding the consultation process with U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Comments specifically on the content or analysis in the BA or BO are beyond the scope of the EIS, therefore no further response is required. Please see Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS.
39	2	Lack of Consultation for Trinity River Division The removal of the TRD from consultation (with the exception of Clear Creek and Whiskeytown Reservoir) is a clear violation of NEPA and the Endangered Species Act. Inclusion of the TRD as a source of water and power for the CVP but not addressing impacts is clearly piecemealing, especially when one considers that the portion of the TRD in the Sacramento basin is included in the reconsultation and the portion in the Trinity River basin is not. The whole of the project must be considered. Throughout the process, we were first told that the Trinity River "might" be included in the consultation, then we were told it's not because the 2000 BO's	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. As stated in the NOI, "The Bureau of Reclamation (Reclamation) intends to prepare a programmatic environmental impact statement (EIS) for analyzing potential modifications to the continued long-term operation of the federal Central Valley Project (CVP), for its authorized purposes, in a coordinated manner with the State Water Project (SWP)…" Reclamation's NOI has stated that our proposed action was to consult on the operations of the CVP, as opposed to the Trinity Division. Operations of the

Ltr#	Cmt#	Comment	Response
		on the Trinity River were still valid. Now it is our understanding is that NMFS is requiring consultation for the Trinity River Restoration Program's flows and restoration actions separately from this process. The Trinity River is integrated into the CVP (with exceptions for area of origin, fish, wildlife and Tribal Trust), and should therefore be considered as part of the entire Reinitiation of Consultation process including the BA, BO and EIS.	Trinity Division have separate NEPA and ESA compliance and the EIS appropriately considers effects to the Trinity River Basin.
39	3	Humboldt County's 50,000 AF The DEIS does not explicitly account on an annual basis for Humboldt County's 50,000 acre-feet of water reserved under the Trinity River Act of 1955, eight water right permits issued to Reclamation in 1959, and a 1959 water contract between Reclamation and the Humboldt County Board of Supervisors. This volume of water should be included as part of the No Action Alternative for Trinity operations, in addition to the Trinity River Record of Decision (Trinity ROD) and the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Record of Decision (Lower Klamath ROD). This volume needs to be accounted in all water supply modeling. As noted in PCFFA's scoping comments (Attachment 2) and SCS' comments on the BA (Attachment 3), the Humboldt County and downstream water users water allocation is embodied in a 1959 water contract between the Humboldt County Board of Supervisors and the Bureau of Reclamation and this volume is separate from fishery flows. Use of this water for the Lower Klamath ROD has been upheld by the Ninth Circuit Court of Appeals.	. Reclamation determined that because there is no proposal for action related to Public Law 84386 (annual releases for the benefit of Humboldt County), there is insufficient information to evaluate potential effects. The modeling assumptions are consistent with the LTP late summer flows.
39	4	Increasing Trinity Reservoir Carryover Storage We [Pacific Coast Federation of Fishermen's Association, Save California's Salmon, Institute for Fisheries Resources] identified in scoping comments a range of new Trinity Reservoir carryover storage levels that would protect the fishery resources of the Trinity River, consistent with the 1955 Trinity River Act and the Trinity River ROD, to protect fishery resources during multi-year droughts. We suggested a range of 900,000 AF to 1.2 million AF based on contemporary studies (Attachment 2). There was no attempt to model this action, although it is consistent with the Objectives of Alternative 4 "Alternative 4 would manage reservoir storage for the primary objective of preserving the coldwater pool". This action should be included as part of an alternative to protect Trinity River fisheries and restore coho, as well as a Reasonable and Prudent Alternative in the BO.	As discussed in Appendix D, Chapter 2, reviewing minimum pool volume at Trinity Reservoir was included in the component screening process. It was screened out of consideration as being out of scope. Revising flow releases and carryover storage from the Trinity Reservoir Restoration Program ROD is not in the project scope. Reclamation is not considering changes to an existing ROD in this project.
39	5	Addressing Lewiston Reservoir Heating	As discussed in Appendix D, Chapter 2, the Lewiston Reservoir temperature issue was included in the component screening process. It was screened out of

Ltr#	Cmt#	Comment	Response
		In our scoping comments we [Pacific Coast Federation of Fishermen's Association, Save California's Salmon, Institute for Fisheries Resources] identified the problem of heating in Lewiston Reservoir as an issue that needs to be addressed as this constrains operation of the Trinity River Division in meeting water temperature objectives (Attachment 2). We recommended that Reclamation address the water temperature warming associated with Lewiston Reservoir through a feasibility study and environmental document to follow up on the 2012 preliminary technical memorandum by Reclamation. This was not addressed in the DEIS and it could be included as part of Alternative 4 as it would help preserve the Trinity coldwater pool. Similar RPA's affecting temperature control in Clear Creek and modeling and physical modifications to Whiskeytown should also be included in the Preferred Alternative.	consideration as being out of scope. The component did not provide specific ways to address temperature other than with flows, and flows are managed by the existing Trinity River Restoration Program ROD. Reclamation is not considering changes to an existing ROD in this project. Reclamation operates Whiskeytown Reservoir to (1) regulate inflows for power generation and recreation, (2) support upper Sacramento River temperature objectives, and (3) provide for releases to Clear Creek, as proposed below. Two temperature curtains in Whiskeytown Reservoir were installed to pass cold water through the bottom layer of the reservoir and limit warming from Carr Power Plant to Clear Creek or Spring Creek Power Plant.
39	6	Interpretation of the Trinity River ROD The DEIS contains the same text concerning the percentage of annual flow that can be diverted from the Trinity Basin. The text that the Trinity ROD "the Trinity ROD "strictly limits Reclamation's transbasin diversions to 55 percent of annual inflow on a 10 year average" is not correct. This was identified in our [Pacific Coast Federation of Fishermen's Association, Save California's Salmon, Institute for Fisheries Resources] comments on the BA (Attachment 3) as well as reiterated in our specific comments on the DEIS (Attachment 1). The Trinity River ROD identifies water volumes, based on five water year types, to be released to the Trinity River and minimum carryover storage. It does not prescribe an annual diversion percentage based on a 10-year average. This text should be removed from the document or provide proper citations validating the statement.	In response to your comment, the ROC EIS document Section 3.3.2.1 has been changed to state, "The Trinity River ROD provides variable annual instream flows for the Trinity River from the Trinity River Division based on forecasted hydrology for the Trinity River Basin as of April 1st of each year, ranging from 368,600 acre-feet (af) in critically dry years to 815,200 af in extremely wet years, to meet legal and trust mandates for the restoration and protection of the Trinity River fishery;...".
39	7	Trinity River Water Temperature Modeling Issues with water temperature modeling for the Trinity River were identified in our [Pacific Coast Federation of Fishermen's Association, Save California's Salmon, Institute for Fisheries Resources] comments on the BA (Attachment 3) and these comments were not addressed in the DEIS. The monthly time-step model used is not appropriate for modeling impacts on water temperature and biological responses. Water temperature analyses should be based on daily time steps because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes. Additionally, Appendix F. Attachment 3-4 which contains water temperature model data for the Trinity River at Douglas City and the North Fork are not included in the document.	The EIS has been revised to remove reference to the Trinity River at North Fork and Trinity River at Douglas City. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding water temperature analyses.

Ltr#	Cmt#	Comment	Response
39	8	The Trinity River Water temperature model developed by USGS [Footnote 1: Jones et al. 2016, Construction, calibration and validation of the RBM10 water temperature model for the Trinity River, Northern California. U.S. Department of Interior, U.S. Geological Survey, Open-File Report 2016-1056], should be used to model water temperatures in the Trinity River. This model is calibrated and validated and operates on the proper time step necessary to evaluate potential biological impacts due to water temperature impacts.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of HEC5Q.
39	9	In addition to not using the appropriate model, adult salmonid water temperature objectives are not properly evaluated and there is no evaluation of the Trinity River ROD salmonid outmigrant temperature objectives. All water temperature assessments need to be remodeled using the Trinity River water temperature model and evaluate the adult and outmigrant temperature objectives adopted by the Trinity River ROD at the proper control points. Additionally, the data for these analyses need to be presented in a manner that does not hide the variability in results and violations of temperature criteria as occurs when all data are averaged across all water year types.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of HEC5Q and appropriate use of model results.
39	10	Coho Salmon Statements that implementation of the Trinity River ROD will continue to contribute to increases in Trinity River Coho Salmon in the Trinity River are not supported by current data on adult returns as noted in our comments on the BA (Attachment 3). As recommended in our [Pacific Coast Federation of Fishermen’s Association, Save California’s Salmon, Institute for Fisheries Resources] previous comments, a detailed assessment on the status of the Trinity Coho Salmon population affected by TRD/CVP water operations must be incorporated as part of the DEIS.	Please see Master Responses 5, Adequacy of Analysis and Mitigation, and Master Response 7, Aquatic Resources, regarding use of best available science and for information on aquatic analyses. The current status of Coho Salmon in the Trinity River is reviewed in Appendix O, Section O.2.3.3.1, Coho Salmon. The EIS at Section 5.9.1.1, Trinity River and Clear Creek, and Appendix O at Section O.3.3.1, Trinity River, describe potential changes to aquatic resources as a result of project-level effect under Alternative 1, including changes to Coho Salmon due to changes in reservoir storage and water temperature resulting from seasonal operations.
39	11	Marijuana Cultivation The impacts of marijuana cultivation on water quality and quantity in Trinity River tributaries needs to be included in the cumulative impacts section. We [Pacific Coast Federation of Fishermen’s Association, Save California’s Salmon, Institute for Fisheries Resources] made this comment on the BA (Attachment 2) and reiterate it here.	As indicated in Section 5.2, Water Quality, effects of Alternatives 1-4 on water quality constituents in the Trinity River are not expected to be adverse because of the minor changes in flows that would occur under these alternatives. Illegal marijuana cultivation is not a reasonably foreseeable action and therefore not included in the analysis of cumulative impacts.
39	12	Eulachon Impacts on the southern DPS of Eulachon (threatened) need to be thoroughly evaluated (Attachment 3). Eulachon was not covered under the biological opinion for the Trinity River ROD and any potential impacts of water	Eulachon are not known to occur in the Trinity River; however, they are known to occur in the Klamath River (see Table 4.1-3). The Eulachon Southern DPS is described in more detail in Appendix O, Section O.2.3.5.1, Fish in the Lower

Ltr#	Cmt#	Comment	Response
		management from this project on Trinity River Division operations need to be evaluated in the DEIS, BA and BO.	Klamath River, and critical habitat for the DPS is described in Section O.2.2.9 Critical Habitat, Eulachon Southern DPS. Appendix O of the EIS was revised to include Eulachon in the Trinity River effects analysis sections (within Section O.3.3.1, Trinity River, Section O.3.5.1, Trinity River, Section O.3.7.1, Trinity River, and Section O.3.9.1, Trinity River). A species description for Eulachon was added to the EIS within Section 4.1.1, Trinity River Fisheries (Section 4.1.1.11, Eulachon). This modification does not change conclusions identified in the EIS. Please also see Master Response 2, Related Regulatory Processes, regarding the Biological Assessment and Biological Opinion processes.
39	13	CalSim II Modeling Errors Information presented on modeled flows for the Trinity River below Lewiston Dam indicate that flows can go below the minimum flows recommended in the Trinity River ROD. For example, flows in November during critically dry water years are 275 cfs for the No Action Alternative (Trinity River ROD) while the minimum flow recommended by the Trinity River ROD for in all water year types is 300 cfs. This indicates that the model is not properly structured/calibrated and calibrated to ensure minimum flows are always met. Increasing modeled flows to meet minimum flow requirements would result in less water in storage or decreased diversions; these model errors would propagate throughout the modeling and provide invalid impact results. The assumptions and calibration of all models need to be corrected and the models rerun.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding modeling of extreme circumstances.
39	14	Modeling Drought Period The information provided on reservoir levels, carryover storage, flows and water temperatures are summarized and averaged across all years, sometimes stratified by water year type, which does not identify the impacts that may occur during a drought cycle when the CVP/SWP system is strained to meet its obligations. Modeling an historic dry period such as 1928-34 is necessary to provide an accurate portrayal of impacts on carryover, water temperatures in the Trinity River, and volumes of water available for diversion.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.
39	15	Climate Change Climate change needs to be consistently addressed in the document. For the analyses of the Trinity River, climate change is disregarded by stating "potential effects of climate change are expected to influence future habitat conditions; however, the effects within the timeframe of this analysis (i.e., up to	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
		2030) are likely to be minor. But in sections addressing impacts to Grass Valley Creek (a Trinity River tributary) and streams in the Central Valley increases in water temperature and aquatic habitat conditions due to climate change are acknowledged and qualitatively assessed. Examples of this are: "If predicted climate trends are accurate, the effects of increasingly extreme conditions could negatively affect Coho Salmon populations in GVC leading up to 2030 compared to current conditions" (page O-130) and "Under the No Action Alternative, water temperatures in the Feather River would likely increase by 2030 due to climate change," (page O-155). The impacts of climate change will likely have a significant impact on habitat/water temperature and should be completely evaluated as part of this document. Not accounting for this anticipated change in the environment ignores the current scientific knowledge of the anticipated impacts of climate change on meteorology and hydrology. Establishment of a minimum cold water carryover storage requirement in Trinity Lake should include evaluation of climate change impacts.	
39	16	Increases in Trinity Salmonid Populations Claims that fishery resources of the Trinity River would increase under the preferred alternative are not supported by information presented on flows and water temperature in the Trinity River. Water temperature model data presented in Appendix O acknowledges violation of adult salmonid temperature North Coast Basin Plan objectives during critical periods. References to negligible changes in habitat availability based on modeled flows are incorrect, habitat availability decreases based on the information presented. These data are also erroneously used to state that ocean commercial and recreational fisheries will benefit from increased populations. Updated flow-habitat information should be used to conduct this analysis and for Chinook Salmon, the Trinity Fish Production model should be employed to evaluate populations effects.	Please see response to comment 39-93. Also, please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science, Master Response 6, Hydrologic Modeling and Surface Water Resources for information on the use of specific models, and Master Response 7, Aquatic Resources, regarding requests for additional modeling and regarding water temperature modeling and application of results.
39	17	Tribal and Inriver Recreational Fishery Potential impacts to the Tribal (Hoopa Valley and Yurok) inriver recreational fisheries in the Trinity River and lower Klamath River and the Trinity Reservoir recreational fishery are not evaluated. These fisheries are very important to the Tribal communities and to the local economies of Trinity, Humboldt and Del Norte counties. Exclusion of these evaluations in this DEIS does not fully disclose impacts resulting from the proposed action.	Section 4.1.1, Trinity River Fisheries, identifies fish species that are Focal Fish Species to the Trinity region, including species important to both Hoopa Valley and Yurok tribes. Project-level effects to Indian Trust Resources are summarized in Section 5.5.1, Project-Level Effects, including effects to fishery resources that are discussed by watershed, and program level-effects are summarized in Section 5.5.2, Program-Level Effects. Project effects to aquatic resources anticipated under each of the alternatives, including effects to species important to tribal and inriver recreations fisheries, are also described in more detail in Appendix O, Section O.3, Evaluation of Alternatives. See also Section

Ltr#	Cmt#	Comment	Response
			6.4.1, Tribal Consultation, regarding tribal consultation on this DEIS, and Appendix K, Cultural Resources and Indian Sacred Sites.
39	18	Clear Creek Reasonable and Prudent Alternatives: It is our understanding that the final Biological Opinion may include possible Reasonable and Prudent Alternatives (RPA's) affecting the portion of the Trinity River Division (TRD) at Whiskeytown Reservoir and Clear Creek, as well as the Shasta Division at Keswick to which the TRD's water flows. It is patently absurd to include only a portion of the TRD in the BA and BO.	This comment pertains to the Biological Assessment and Biological Opinion for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	19	Since the final non-suppressed BO has not yet been made available to the public, release of the DEIS was premature because the public has not had an opportunity to review the whole of the action and potential impacts from implementation of proposed RPA's in the final BO. Clear Creek and Whiskeytown RPA's in particular could negatively impact flows, cold water storage and temperatures in the Trinity River.	This comment pertains to the Biological Opinions for ROC on LTO which is a separate ESA consultation, outside of the scope of this EIS. Please see Master Response 2, Related Regulatory Processes for additional discussion on NEPA and ESA timeline requirements.
39	20	[ATT1:] Attachment 1 SCS/PCFFA/IFR Specific Comments on the Draft EIS for the "Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project", Sept 2019.	The commenter provided this attachment to outline their individual comments on the Draft EIS. Those comments are addressed in these responses to comments; therefore, no additional response is required.
39	21	[ATT1:] Draft EIS [Page:] 1-3 [EIS Text:] Water Quality: The changes in river flows for Alternatives 1 through 4 would have minor effects on water quality for the Trinity [Comment:] This statement contradicts statement on page 1-4 concerning temperature impacts.	The statement that the commenter has identified as being in conflict with this determination of minor effects on water quality presented results of the evaluation of how changes in water temperature could affect aquatic resources in the river. As is noted in Section 5.2.1.1, the impact from potential changes in water temperature were evaluated in the fisheries analysis (Section 5.9, Aquatic Resources).
39	22	[ATT1:] Draft EIS [Page:] 1-4 [EIS Text:] Aquatic Resources: The changes in Trinity River flows for Alternatives 1 through 4 would result in lower water temperatures from December through May but higher water temperatures in September and November under some alternatives. While maximum September water temperatures under the action alternatives would exceed recommended criteria for spawning and egg incubation, little salmonid spawning occurs in the Trinity River in September and adverse effects are not expected. Under Alternative 3, modeled maximum November water temperatures would increase substantially and exceed the recommended criterion, likely resulting in adverse effects on	USEPA (2003) identifies protective recommednaitons for salmonid spawning and egg incubation, which includes holding. Additionally, USEPA (2003) indicates constant exposure to water temperatures greater than 55°F could reduce viability of gametes in holding adults. The HEC5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature predictions. Water temperature within a stream are likely to vary with different habitat availability (e.g., deep pools, riparian vegetation) and at daily time steps. However, maximum monthly water temperatures from HEC5Q provide the closest available approximation to the values recommended by USEPA (2003) and are therefore used herein to provide a coarse-level comparative analysis for each alternative. Refer to Master

Ltr#	Cmt#	Comment	Response
		Fall-Run Chinook Salmon, Spring-Run Chinook Salmon, and Coho Salmon spawning success. [Comment:] Exceeding water temperature objectives in September can impact holding spring Chinook Salmon directly by increasing pre-spawning mortality or indirectly impacting production by affecting the development of gametes of holding fish.	Response 7, Aquatic Resources, for additional discussion of use of USEPA (2003) temperature criteria for the purposes of comparison of alternatives in the EIS. Water temperature impacts to spring-run Chinook salmon spawning and egg incubation anticipated under the preferred alternative are addressed in Section 5.9.1.1, Trinity River and Clear Creek, and are further described in Appendix O, Section O.3.3.1, Trinity River.
39	23	[ATT1:] Draft EIS [Page:] 2-2 [EIS Text:] In 2000, the U.S Department of the Interior Secretary and the Hoopa Valley Tribe Chairman signed the U.S. Department of the Interior Record of Decision Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report (Trinity River ROD). This defined a minimum flow regime ranging from 369,000 acre-feet (AF) in critical dry years to 816,000 AF in wet years in the Trinity River. [Comment:] The Trinity ROD recommendation is 815,000 AF release is for Extremely Wet WY, not Wet	Please see response to 39-6.
39	24	[ATT1:] Draft EIS [Page:] 2-2 [EIS Text:] The purpose of the action considered in this EIS is to continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species. [Comment:] The document needs to ensure that the No Action accurately addresses the flow and temperature objectives adopted by the Trinity River ROD (2000) and the Klamath Long-term plan ROD (2017)	Please see response to comment 39-3. As noted in modeling assumptions, Trinity ROD is accurately addressed.
39	25	[ATT1:] Draft EIS [Page:] 3-7 [EIS Text:] The Trinity River ROD strictly limits Reclamation’s transbasin diversions to 55% of annual inflow on a 10-year average basis to meet legal and trust mandates for the restoration and protection of the Trinity River fishery [Comment:]] Nowhere in the ROD is this sharing stipulated. The only restriction in the ROD are annual flow volumes, carryover and temperature	Please see response to comment 39-6.

Ltr#	Cmt#	Comment	Response
		criteria. See previous comments submitted on the BA. This text needs to be deleted throughout the document or a legitimate citation supporting this statement provided	
39	26	[ATT1:] Draft EIS [Page:] 3-7 [EIS Text:] 3.3.2 Trinity River Division [Comment:] The Humboldt County and downstream water users water allocation (50,000 AF annually) embodied in a 1959 water contract between the Humboldt County Board of Supervisors and the Bureau of Reclamation needs to be accounted for in all modeling exercises. This volume is separate from fishery flows of the Trinity River ROD and Long-Term Plan to Protect Adult Salmon in the Lower Klamath River which are flows to benefit fishery resources of the Trinity River.	Please see response to comment 39-3.
39	27	[ATT1:] Draft EIS [Page:] 3-7 [EIS Text:] Buckhorn Dam operations. [Comment:]] This is included as part of Alternative 4 but it seems like this action is beyond the scope of this document since it does not address CVP water needs.	Reclamation would increase flow from the Buckhorn Dam outlet works to Grass Valley Creek for maintenance of the outlet channel and improve juvenile and adult migration. The project scope includes managing listed species through operational changes to the CVP and SWP. Please see Appendix D, Attachment 1, Section D1.2.3.1.2 for more information on this project element.
39	28	[ATT1:] Draft EIS [Page:] 3-7 [EIS Text:] Reclamation maintains at least 600 TAF in Trinity Reservoir, except during the 10–15% of water years when Shasta Reservoir storage is very low. These years do not have a specific threshold, but modified operations may be considered when storage in Shasta Reservoir is less than 2 MAF at the end of September and forecasted to continue falling. [Comment:] According to the 2000 BO on the Trinity River ROD, BOR must consult with NMFS if they plan on going below the 600,000 AC carryover threshold. This needs to be stated in the document as part of the seasonal operations.	Section 3.3.2.1 has been modified to include the requirement from the Trinity River ROD for coordination with USFWS and NMFS for cases of drawdown below 600 TAF.
39	29	[ATT1:] Draft EIS [Page:] 3-7 [EIS Text:] Section 3.3.2.1. Seasonal operations.	Section 3.3.2.1 of the EIS sufficiently describes seasonal operations. No changes have been made.

Ltr#	Cmt#	Comment	Response
		[Comment:] This section should include a description of flow management associated with Lewiston Reservoir due to its impact on water temperatures and the need to continually move large volumes of water through this reservoir during the late spring through summer due to heating which compromises the ability to meet water temperature objectives in the Trinity River without diverting large volumes of water to the Sacramento Basin.	
39	30	[ATT1:] Draft EIS [Page:] 3-18 [EIS Text:] Section 3.4.1.3. Coldwater Pool Management and #.4.1.4. Fall and Winter Refill and Redd Maintenance [Comment:] This section needs to discuss how diversion from the Trinity are integrated into these operations. When Reclamation has diverted water from the Trinity in late fall to accommodate Sacramento Basin water needs decreases the refill potential of Trinity Reservoir and potentially impacting Trinity ROD restoration objectives. Also, representatives from the Trinity should be included in the SRTTG.	EIS Section 3.4.1.3 is now Section 3.4.1.4 and sufficiently describes cold water pool management. No changes have been made.
39	31	[ATT1:] Draft EIS [Page:] 3-24 [EIS Text:] While Lewiston Dam releases to the Trinity River would in accordance with the ROD of 2000, modifications of operations of the CVP could cause minor changes in the operations on the Trinity River. [Comment:] What are these "minor changes in operations"? What are considered minor changes? These are not identified in the operations section.	Modeling for the EIS incorporates the requirements of the Trinity River ROD. Minor changes are described in Section 3.4.2.1, Clear Creek Flows.
39	32	[ATT1:] Draft EIS [Page:] 3-44 [EIS Text:] Alternative 2. 3.5.2 Trinity River Division. As described in the No Action Alternative and Alternative 1, the Trinity River system would be operated according to the 2000 Trinity River ROD with 2017 Lower Klamath ROD augmentation flows. [Comment:] But in alternative 1 it mentions that there are "minor changes in operations in the Trinity River so alternatives 1 and No Action are not the same. Please clarify. Additionally, if Trinity is not going to be integrated into the operation of Shasta to meet additional flows for fish and wildlife, then diversions from the Trinity should be reduced to ensure the water temperature and carryover objectives for the Trinity are met.	See response to comment 39-31.

Ltr#	Cmt#	Comment	Response
		[ATT1:] Draft EIS [Page:] 3-47 [EIS Text:] Alternative 3. 3.6.2 Trinity River Division. As described in the No Action Alternative and Alternative 1, the Trinity River system would be operated according to the 2000 Trinity River ROD with 2017 Lower Klamath ROD augmentation flows. [Comment:] Same as comment on Alternative 2.	
39	33	[ATT1:] Draft EIS [Page:] 3-50 [EIS Text:] Alternative 4. 3.7.2 Trinity River Division. As described in the No Action Alternative and Alternative 1, the Trinity River system would be operated according to the 2000 Trinity River ROD with 2017 Lower Klamath ROD augmentation flows. In addition to these operations, Reclamation would modify operations at Buckhorn Dam, as described below. [Comment:] Increasing carryover storage in Trinity Reservoir should also be included in this alternative. Minimum carryover storage should be set at a minimum of 750,000 as recommended in the BOR technical memo (Bender 2012. Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis. Technical Memorandum No. 86-68220-12-06, U.S. Bureau of Reclamation, Technical Service Center, Denver, CO.) and to should be set at 900,000 to ensure protection of the fishery resources protected by temperature objectives as noted in the Balance Hydrologics analysis (See Balance Hydrologics (6/26/1992) “The Need for Standards for Minimum Carryover Storage in Trinity Reservoir” Accessed at http://tcrcd.net/trl-stor.htm).	As discussed in Appendix D, Chapter 2, establishing a minimum pool volume at Trinity Reservoir was included in the component screening process. However, transbasin diversions, temperature objectives, and carry over storage are regulated by the 2000 Trinity River ROD and modifying conditions of this decision are not within the project scope so it was screened out of consideration as out of scope. Under Alternative 1 and the No Action Alternative, seasonal operations in Trinity Reservoir would continue to be integrated with Shasta Reservoir and Reclamation would continue to implement the Trinity River Restoration Program ROD with lower Klamath River augmentation flows.
39	34	[ATT1:] Draft EIS [Page:] 4-3 [EIS Text:] Table 4.1-1. Average Seasonal Timing of Trinity Lake Exports (2001-2017) [Comment:] This table shows that significant volumes of water are diverted during times when temperature control in the Sacramento are not an issue (Jan-March, Nov-Dec.) so these volumes could be used to increase Trinity carryover.	Operations will remain consistent with the 2000 Trinity ROD. The commenter does not make a general comment on the EIS or raise a specific significant environmental issue. No further response is required.
39	35	[ATT1:] Draft EIS [Page:] 4-3	Modeling includes Trinity ROD in its assumptions. As shown in Append F Attachment 3-4, modeled temperature results on the Trinity River are similar across all alternatives. As NAA meets temperature requirements of Trinity

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Temperature Objectives for the Trinity. [Comment:] The Trinity ROD also has juvenile salmonid outmigrant temperature objectives. Since the alternatives state that they follow the 2000 Trinity ROD, then the juvenile salmonid outmigrant objectives at Weitchpec need to be included and evaluated as these are a component of the restoration program influenced by water management. Water Temp (F) Species Date Normal, Wet, Ext. Wet Dry and Crit Dry Steelhead May 22 <55.5F <59.0F Coho Salmon June 4 <59.0F <62.6F Chinook Salmon July 9 <62.6F <68.0F	ROD, all other model alternatives will meet temperature requirements of Trinity ROD. Please also refer to Master Response 7, Aquatic Resources, regarding water temperature thresholds and objectives for salmonids.
39	36	[ATT1:] Draft EIS [Page:] 4-4 [EIS Text:] Table 4.1-3. Focal Fish Species in the Trinity River Region [Comment:] Fall-Run Chinook Salmon needs to be included in this table. There are also fisheries for brown trout, rainbow trout in the reservoirs, and sockeye/kokanee in the reservoir. This should be added. And description of these other fishes included in the text	Several species, including Fall-Run Chinook Salmon, Sockeye Salmon, Brown Trout, and Rainbow Trout have been added to Table 4.1-3 and are evaluated in Section 4.1.1, Trinity River Fisheries. This modification does not change conclusions identified in the EIS.
39	37	[ATT1:] Draft EIS [Page:] 4-7 [EIS Text:] Table 4.1-3 includes Black Bass but there is no text describing this fish complex. [Comment:] Section on "black bass" should be added since this is an important recreational fishery.	Appendix O was updated to include a description of Trinity Lake Recreational Fish Species in Section O.2.3.1.1 and includes a discussion of the Black Bass complex. The EIS at Section 4.1.1, Trinity River Fisheries, was revised to include a section 4.1.1.12, Fish in Trinity Lake, describing recreational fish species found in Trinity Lake. A summary of potential effects on habitat and fish species within Trinity Lake, including Black Bass, was added to Chapter 5, Environmental Consequences, in Section 5.9.1.1.1, Trinity Lake. This modification does not change conclusions identified in the EIS.

Ltr#	Cmt#	Comment	Response
39	38	[ATT1:] Draft EIS [Page:] 4-44 [EIS Text:] In addition, the Pacific Ocean supports the Southern Resident Killer Whale, which relies upon Chinook Salmon, including Central Valley Fall-Run Chinook Salmon for food. [Comment:] Trinity and Klamath Chinook stocks should be included in this statement because they intermingle with Sacramento Chinook stocks, along with all Chinook populations that migrate along the California Coast. Impacts to Trinity salmon stocks may impact the Southern Resident Killer Whale population since Klamath-Trinity fall Chinook Salmon make up a significant part of the mixed stock salmon population off of northern California and southern Oregon.	Sections 4.9, Nearshore Pacific Ocean on the California Coast, 4.9.1, Pacific Ocean Habitat of the Southern Resident Killer Whale, and Appendix O, Section O.2.11.1, Nearshore Pacific Ocean on the California Coast—Pacific Ocean Habitat of the Killer Whale, have been revised to include Trinity River and Klamath River stocks. This modification does not change conclusions identified in the EIS.
39	39	[ATT1:] Draft EIS [Page:] 5-28 [EIS Text:] Indian Trust Resources 5.5.1.1 Trinity River [Comment:] Where is the control point that these water temperatures are referring to? Discussion of water temperature impacts is flawed using the monthly model. For assessing temperature impacts on the Trinity River and lower Klamath River, the USGS water temperature model that accurately simulates daily mean water temperature along the course of the Trinity River, from Lewiston Dam to the Klamath River confluence, should be used to evaluate how changes in TRD water operations would affect Trinity and lower Klamath water temperatures and how these would impact fishery resources. Jones et al. 2016, Construction, calibration and validation of the RBM10 water temperature model for the Trinity River, Northern California. U.S. Department of Interior, U.S. Geological Survey, Open-File Report 2016-1056. 56p. The Reclamation Temperature Model is a monthly model which is not appropriate for modeling impacts on water temperature. Water temperature analyses should be based on daily time steps because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes. As noted above, no modeling of attainment of outmigrant salmonid water temperature objectives established by the Trinity ROD in 2000 or impacts of	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding use of HEC5Q.

Ltr#	Cmt#	Comment	Response
		changes on carryover storage on subsequent years water temperatures is evaluated and is necessary for these analyses.	
39	40	[ATT1:] Draft EIS [Page:] 5-44 [EIS Text:] 5.9. Aquatic Resources. 5.9.1.1.1 Trinity River below Lewiston. Model results illustrating the average flow in the Trinity River below Lewiston Dam for all water year types show no discernible difference among the action alternatives during any time of the year, [Comment:] Presenting modeling data summarized across all water year types hides differences that may exist due to differences in hydrology in different water years types and impacts on carryover storage. Monthly average flows should be presented by the five Trinity water year types. Additionally, appendices with the individual water year results should be presented to catastrophic occurrences can be identified.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.
39	41	[ATT1:] Draft EIS [Page:] 5-44 [EIS Text:] The differences would be greatest during February of above normal water years, when the average flow under the action alternatives would be 273 to 365 cfs greater than flow under the No Action Alternative (Figure 5.9-2). [Comment:] Increased flows alluded to during February during "above normal water years" is likely due to a few spill events which is dependent on reservoir management and not necessarily a benefit to the fishery resources depending on the timing and magnitude of these flows. These should be evaluated to look at potential for redd scour or increase fry movement mortality using studies and models developed for the TRRP.	The EIS has been updated to include the following revision in Section 5.9.1.1.1: “The increased February flows in above normal water years under the action alternatives overlaps with the spawning and/or incubation period of Spring- and Fall-Run Chinook Salmon, Coho Salmon, and Steelhead in the Trinity River below Lewiston Dam. However, this increase in flow is not expected to result in redd scour, based on previous studies in the Trinity River which reported sand and gravel substrates became mobile at flows of around 2,700 cfs or greater (McBain and Trush 1997). Increased flows in February may increase habitat availability for migrating and holding Steelhead. These same increases in flow could result in potential adverse effects on fry and juvenile Coho and Chinook salmon due to reduced habitat availability, estimated to be in the range of approximately 25% to 30% decrease in WUA (USFWS and Hoopa Valley Tribe 1999: 123). Coho egg incubation takes place between November and April and lasts from 38 to 48 days depending on water temperature (Shapovalov and Taft 1954). Spring-Run and Fall-Run Chinook Salmon fry emerge from the gravel beginning in December, and emergence can last into mid-April. Since this reduction in available habitat would only occur during above normal water years, only partially overlaps with the fry and juvenile lifestages of Chinook and Coho Salmon, and is limited to February, the reduction in available habitat is not expected to have a substantial effect on fry

Ltr#	Cmt#	Comment	Response
			and juvenile Coho and Chinook Salmon.” This modification does not change conclusions identified in the EIS. Please also see Master Response 5, Adequacy of Analysis and Mitigation, and Master Response 7, Aquatic Resources, regarding the suggestion to use TRRP studies and models.
39	42	[ATT1:] Draft EIS [Page:] 5-46 [EIS Text:] The increased February flows in above normal water years under the action alternatives would not overlap substantially with the spawning and incubation period of other fish species of concern in the Trinity River below Lewiston Dam, so any effects would be negligible and potentially beneficial for migrating and holding steelhead because of increased habitat availability. [Comment:] This is an incorrect statement. There may still be Coho salmon incubating in the gravel and also Chinook and Coho salmon fry can be displaced due to high releases associated with safety of dam releases, depending on how the releases are made. This displacement can lead to increased fry mortality.	See response to comment 39-41.
39	43	[ATT1:] Draft EIS [Page:] 5-46 [EIS Text:] These same increases in flow could result in potential adverse effects on fry and juvenile Coho and Chinook salmon due to reduced habitat availability, however, the percent change in total WUA in this flow range is negligible (USFWS and Hoopa Valley Tribe 1999:]123). [Comment:] The statement "the percent change in total WUA in this flow range is negligible, citing USFWS&HVT 1999 is incorrect. Based on the graphic presented on page 123 of USFWS and HVT 1999, changes in Chinook Salmon and Coho Salmon at flows from 500 cfs (NAA) and ~830 cfs (Alt 1) are roughly 25% decrease in WUA for Chinook fry, 20% decrease in WUA for Coho fry, 30% decrease in WUA for Chinook juveniles and 25% decrease in WUA for Coho juveniles. These are not negligible changes (decreases).	The EIS has been revised as follows: “These same increases in flow could result in potential adverse effects on fry and juvenile Coho and Chinook salmon due to reduced habitat availability, estimated to be in the range of a 25% to 30% decrease in WUA (USFWS and Hoopa Valley Tribe 1999:]123). Coho egg incubation takes place between November and April and lasts from 38 to 48 days depending on water temperature (Shapovalov and Taft 1954). Spring-Run and Fall-Run Chinook Salmon fry emerge from the gravel beginning in December, and emergence can last into mid-April. Since this reduction in available habitat would only occur during above normal water years, only partially overlaps with the fry and juvenile lifestages of Chinook and Coho Salmon, and is limited to February, the reduction in available habitat is not expected to have a substantial effect on fry and juvenile Coho and Chinook Salmon.” This modification does not change conclusions identified in the EIS.
39	44	[ATT1:] Draft EIS [Page:] 5-46 [EIS Text:] Modeled average water temperatures under the action alternatives and the No Action Alternative (Figure 5.9-3, Average Monthly Trinity River	Please see Section 4.1, Trinity River Region. Water temperature objectives for the Trinity River set forth in Order 90-05 and shown in Table 4.1-2 and in Appendix O, Table O.3-1. The water temperature objectives include the following objective for downstream of Lewiston Dam: “From October 1 to

Ltr#	Cmt#	Comment	Response
		Water Temperatures below Lewiston Dam, Average of All Water Year Types) would be maintained well below the daily average water temperature objectives set by the Regional Water Quality Control Board, North Coast Region (SWRCB 1990) for the Trinity River below Lewiston Dam, which stipulate a maximum of 60°F from July 1 to September 14 and a maximum of 56°F from September 15 to December 31. [Comment:] These data are irrelevant to the impact analysis as the temperature control points not below Lewiston Dam. The control points are presented earlier in the document on page 4-4 (Table 4.1-2. Water Temperature Objectives for the Trinity River and the outmigrant temperature objectives) should be used in this part of the document and the proper Trinity River water temperature model employed.	December 31, the daily average temperature should not exceed 56°F between Lewiston Dam and the confluence of the North Fork Trinity River." See response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River. Regarding the relevance of modeled water temperature below Lewiston Dam, Appendix O, Section O.3.2.1.3 provides details about how water released from Lewiston Dam ties into to the water temperature objectives which are set for locations downstream. "Maintaining a flow of 450 cfs during the summer and early fall was found to meet the water temperature objectives for the Trinity River when water released from Lewiston Dam was 53°F or less (USFWS 1999: 203). Modeled monthly flows in the Trinity River from July to October are typically equal to or greater than 450 cfs except in October when flows are reduced to maximize physical spawning habitat for salmonids." Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	45	[ATT1:] Draft EIS [Page:] 5-46 [EIS Text:] While the HEC5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature predictions, maximum monthly water temperatures from HEC5Q provide the closest available approximation to the values recommended by USEPA (2003) and are therefore used herein to provide a coarse-level comparative analysis for each alternative. [Comment:] The Trinity River Restoration Program has a daily water temperature model that it has been used for several years to evaluate flow alternatives (Jones et al. 2016). This model should be used to evaluate the 7-day USEPA values. Using the HEC5Q monthly output is inappropriate. This comment has been made on the BA and these temperature analyses need to be redone using the best available model.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.
39	46	[ATT1:] Draft EIS [Page:] 5-47 [EIS Text:] Based on modeled maximum water temperatures the following effects were observed:	Maximum water temperature output by water year type was not included in the HEC5Q model. Average water temperatures by water year type show water temperatures never exceed temperature criteria in any months for any alternatives. The maximum water temperature model output for all water year types show water temperatures exceed 60°F and 56°F under all alternatives for September and October, respectively. Thus, maximum water temperature

Ltr#	Cmt#	Comment	Response
		[Comment:] Summary portrays most alternatives are better than the no action alternative for Max temp criteria, but this is summarizing across all water years. Summarizing across all water years is not useful for evaluating impacts because variation in results are masked. Water temperature traces for all modeling should be presented.	output for all water year types was used as a conservative approach to discuss the effects of the different alternatives.
39	47	[ATT1:] Draft EIS [Page:] 5-47 [EIS Text:] Based on modeled maximum water temperatures the following effects were observed: Although the modeled maximum water temperatures in September and October under all alternatives would exceed the 55°F USEPA (2003) criteria for spawning, egg incubation, and fry emergence and could compromise salmonid reproductive success, there would be little or no potential for adverse effects relative to the No Action Alternative. While modeled maximum September temperatures under Alternatives 1–3 would exceed the No Action Alternative, little salmonid spawning occurs in September and the monthly model results may not accurately represent the daily maxima upon which the USEPA (2003) criteria are based. Spawning by Spring-Run Chinook Salmon in the Trinity River commences in late September and peaks in October, while spawning by Fall-Run Chinook Salmon commences in October and peaks in November. Trinity River Coho Salmon primarily spawn in November and December, while Steelhead and Coastal Cutthroat Trout spawn from January–April and September– April respectively. [Comment:] The exceedance maximum USEPA water temperature standards would impact holding spring Chinook Salmon and developing gametes. At stated in the text “modeled maximum September temperatures under Alternatives 1–3 would exceed the No Action Alternative “ so there is an impact associated with the action alternatives during this period. In addition to the impact on holding and early spawning spring Chinook Salmon there would be impacts on rearing juvenile Coho Salmon and Steelhead.	Refer to Master Response 7, Aquatic Resources, for discussion of use of USEPA (2003) temperature recommendations for the purposes of comparison in the EIS. USEPA 2003 recommedations are based on the maximum 7-day average of the daily maxima for water temperature, while the HEC5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature predictions. Model output for the average water temperatures by water year type show water temperatures never exceed temperature recommendations in any months for any alternatives. The maximum water temperature model output for all water year types show water temperatures exceed 60°F and 56°F under all alternatives for September and October, respectively. Thus, maximum water temperature output for all water year types was used as a conservative approach to discuss the effects of the different alternatives. See Appendix O, Section O.3.3.1.3, Trinity River Downstream of Lewiston Dam, for additional detailed discussion of potential changes to aquatic resources due to variation in temperature, including effects to Chinook salmon, Coho salmon, and steelhead. As described in Appendix O, “Modeled maximum temperatures in the Trinity River are approximately 3°F to 5°F lower under Alternative 1 compared to the No Action Alternative in July and October and approximately 1°F to 2°F higher in August, September, and December, with similar maximum temperatures in the remaining months.” Negative effects to salmonids from increased water temperature in August, September, and December are described in Section O.3.3.1.3, as well as potential positive effects to salmonids from decreased water temperatures in July and October.
39	48	[ATT1:] Draft EIS [Page:] 5-48 [EIS Text:] The magnitude of the November water temperature exceedance under Alternative 3 could substantially reduce spawning success and year-class recruitment, but the expected frequency of occurrence cannot be determined	Section 5.9.1.1.1 of the EIS has been revised to state the following: “Although the modeled maximum water temperature under Alternative 3 exceeding the USEPA (2003) water temperature recommendations (55°F) during November could limit spawning success and year-class recruitment, the probability of exceedance for November is less than 1%. Therefore, the expected frequency of occurrence is expected to be very low, and effects are anticipated to be negligible.”

Ltr#	Cmt#	Comment	Response
		using available modeling data and the likelihood of population-level effects is therefore uncertain. [Comment:] Using the appropriate water temperature and a time series analysis is needed to evaluate frequency of exceedances. Making a statement such as "expected frequency of occurrence cannot be determined using available modeling data and the likelihood of population-level effects is therefore uncertain" is not correct.	This modification does not change conclusions identified in the EIS.
39	49	[ATT1:] Draft EIS [Page:] 5-77 [EIS Text:] 5.10 Terrestrial Biological Resources [Comment:] There is no evaluation of impacts to Trinity River terrestrial biological resources, specifically western-pond turtles and foothill yellow-legged frog.	Western pond turtle is discussed under Potential Changes to Habitat for Special-Status Reptiles under Section P.2.3.2, Program-Level Effects. Foothill yellow-legged frog is discussed under Potential Changes to Existing Riparian Areas and Associated Special-Status Species. In addition, Potential Changes to Wildlife and Plant Habitat on River Banks, under Section P.2.3.1, Project-Level Effects and Potential to Injure or Kill Special-Status Species, under Section P.2.3.2, Program-Level Effects, are applicable to western pond turtle and foothill yellow-legged frog. Given that the majority of the impacts are discussed at the program level, Trinity River is not called out specifically but are addressed by the impact analysis and mitigation measures in Appendix P.
39	50	[ATT1:] Draft EIS [Page:] 5-94 [EIS Text:] As described in Section 5.9, population of salmon along the southern Oregon and northern California coast would be higher under Alternatives 1 and 4 compared to the No Action Alternative. Increases in salmon population could potentially increase commercial and recreational ocean salmon harvest. [Comment:] This statement is not supported due to the incorrect temperature model used, no evaluation of juvenile outmigrant temperature criteria and incorrect conclusions concerning changes in WUA (see previous comment specifically on WUA/habitat in the Trinity River.	Reclamation used the best available science throughout the EIS. Please see Master Response 5, Adequacy of Analysis and Mitigation, for additional information on the use of best available science. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, for information regarding temperature modeling.
39	51	[ATT1:] Draft EIS [Page:] 5-94 [EIS Text:] Potential fisheries related changes to the regional economy [Comment:] An evaluation of Trinity River inriver recreational fishery and the reservoir fisheries needs to be presented.	Please refer to Section 3.3.2.2 and 3.3.2.3 regarding the analysis of the Trinity and Klamath Rivers. Please see EIS Section 5.11 regarding potential impacts to fisheries related changes to the regional economy.
39	52	[ATT1:] Draft EIS [Page:] 5-121	Please refer to response to comment 39-11. Cumulative effects in the Trinity River watershed have been considered. Please refer to Draft EIS Section 5.20

Ltr#	Cmt#	Comment	Response
		[EIS Text:] 5.20.4 Indian Trust Assets [Comment:] Cumulative impacts to the fishery resources of the Hoopa Valley and Yurok tribes needs to be included in this section.	and Appendix Y. Because no specific cumulative effects are identified in this comment no additional response is possible.
39	53	[ATT1:] Draft EIS [Page:] 5-124 [EIS Text:] The changes in Trinity River flows for Alternative 1 would result in lower water temperatures from December through May but higher water temperatures in September and November. While maximum September water temperatures would exceed recommended criteria for spawning and egg incubation, little salmonid spawning occurs in the Trinity River in September and adverse effects are not expected. [Comment:] The statement that the exceedance of water temperature objectives in September is not expected to have adverse effects because little spawning occurs during this time is flawed because spring Chinook Salmon are holding during this time period and they would be adversely affected by these high temperatures. Also see previous comments on issues with water temperature modeling that was used to support these statements.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with USEPA (2003) temperature criteria and NCRWQCB temperature objectives.
39	54	[ATT1:] Appendix C [Page:] C-14] [EIS Text:] C.2.1 Trinity River Watershed [Comment:] In addition to including the Trinity ROD and its actions for restoration, the Record of Decision for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River needs to be included.	Please refer to Appendix C, Section C.2.2.2, Fish and Wildlife Requirements on Trinity River, and to the EIS at Section 3.3.2.3, Long-Term Plan to Protect Adult Salmon in the Lower Klamath River, for discussion of the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Record of Decision.
39	55	[ATT1:] Appendix C [Page:] C-14 [EIS Text:] Temperature objectives for the Trinity River [Comment:] The outmigrant water temperature objectives of juvenile salmonids that were adopted as part of the Trinity ROD need to be included in these analyses using the Trinity Water Temperature Model. See previous comment with the objectives.	See response to comment 39-50.
39	56	[ATT1:] Appendix C [Page:] C-33	Operations will remain consistent with the 2000 Trinity ROD. The commenter does not make a general comment on the EIS or raise a specific significant environmental issue. No further response is required.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Reclamation operates the Shasta, Sacramento River, and Trinity River divisions of the CVP to meet (to the extent possible) the provisions of SWRCB Order 90-05. [Comment:] This statement acknowledges the integrated operation of Trinity River Division with other Central Valley Project Operations, but descriptions of operations generally ignore the interconnection of management. TRD operations need to be completely integrated with CVP operations but with TRRP goals and objectives fully met.	
39	57	[ATT1:] Appendix D [Page:] 3-3 [EIS Text:] Table 3.1-1. Minimum pool volume at Trinity Reservoir. Establish a minimum pool volume of 900,000 to 1,000,000 AF at Trinity Reservoir to protect an adequate lake level for boating facilities and a cold water source for fishery restoration on the Trinity River; if unable to establish request, mitigate the impact by funding the construction of low-water boat launch facilities and Trinity Center and Fairview [Comment:] The reason for excluding this action as part of an alternative is given as "not in the project scope" but text describing the scope ("Reclamation considers the project scope to be focused on flexibility for maximizing water deliveries and managing listed species through operational changes to the CVP and SWP") indicates that this action would be within the project scope because it would address managing cold water for listed species as well as adding operational flexibility during drought periods could allow for minimizing water deliveries during drier years. Incorporating a minimum carryover storage of 900,000 to 1,000,000 AF in Trinity Reservoir would fit with Alternative 4 of this DEIS. This alternative is described on page 3-48 of the DEIS as “Alternative 4 includes management of storage facilities to preserve coldwater pool and additional instream flows in the Sacramento River and the Delta as proposed during scoping. Alternative 4 strives to meet instream flow targets by balancing instream flows with carryover storage sufficient to protect fish." Since the Trinity is intricately tied into CVP-SWP operations as described throughout the operations descriptions though the document this is proposed addition to at least alternative 4 is appropriate and within scope.	As discussed in Appendix D, Chapter 2, establishing a minimum pool volume at Trinity Reservoir was included in the component screening process. However, transbasin diversions, temperature objectives, and carry over storage are regulated by the 2000 Trinity River ROD and modifying conditions of this decision are not within the project scope; therefore it was screened out of consideration. Alternative 1 and the No Action Alternative include seasonal operations in Trinity Reservoir would continue to be integrated with Shasta Reservoir and Reclamation would continue to implement the Trinity River Restoration Program ROD with lower Klamath River augmentation flows.
39	58	[ATT1:] Appendix D [Page:] 4-3 [EIS Text:] Alternative 4. Little Grass Valley Flows	Reclamation would increase flow from the Buckhorn Dam outlet works to Grass Valley Creek for channel gravel mobilization and improve juvenile and adult migration. The project scope includes managing listed species through

Ltr#	Cmt#	Comment	Response
		[Comment:] These actions should either be removed from this alternative (it does nothing to preserve storage or meet CVP water needs. If this is a valid component of this alternative then other actions proposed to address Trinity River water management such as addressing infrastructure of Lewiston Dam to address temperature issues and evaluating increasing Trinity Reservoir carryover storage should also be include as part of this alternative. See USBR (2012) Lewiston Temperature Management Intermediate Technical Memorandum, Lewiston Reservoir, Trinity County, California. Report by U. S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.	operational changes to the CVP and SWP. This action also supports the purpose of Alternative 4 to meet instream flow targets for protection of fish. Please see Appendix D, Attachment 1, Section D1.2.3.1.2 for more information on this project element. As discussed in Appendix D, Chapter 2, reviewing minimum pool volume at Trinity Reservoir was included in the component screening process. It was screened out of consideration as being out of scope. Revising flow releases and carryover storage from the Trinity Reservoir Restoration Program ROD is not in the project scope. Reclamation is not considering changes to an existing ROD in this project.
39	59	[ATT1:] Appendix D [Page:] 4-21 [EIS Text:] The Trinity River ROD strictly limits Reclamation's transbasin diversions to 55% of annual inflow on a 10-year average basis to meet legal and trust mandates for the restoration and protection of the Trinity River fishery [Comment:] Nowhere in the ROD is this sharing stipulated. The only restriction in the ROD are annual flow volumes, carryover and temperature criteria. See previous comments submitted on the BA. This text needs to be deleted throughout the document or a legitimate citation supporting this statement provided.	Please see response to comment 39-6.
39	60	[ATT1:] Appendix D [Page:] 4-21 [EIS Text:] Reducing transbasin diversions was intended to improve the cold water pool in Trinity Reservoir to improve conditions for fall spawning down the Trinity River. [Comment:] Reducing transbasin diversions was necessary to meet the recommendations of the Trinity ROD, not just to improve cold water pool and spawning condition for fall chinook. This section should be rewritten to reflect the larger context of the goals and objectives of the Trinity ROD.	The EIS text identified in the comment has been modified in response to you comment. Proposed text – "Reducing transbasin diversions was intended to improve the cold water pool in Trinity Reservoir to improve conditions for fall spawning down the Trinity River and to meet the requirements of the Trinity ROD."
39	61	[ATT1:] Appendix D [Page:] 4-21	Appendix D, Section 4.2.2.1 has been modified to include the requirement from the Trinity River ROD for coordination with USFWS and NMFS for cases of drawdown below 600 TAF.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Reclamation maintains at least 600 TAF in Trinity Reservoir, except during the 10–15% of water years when Shasta Reservoir storage is very low. These years do not have a specific threshold, but modified operations may be considered when storage in Shasta Reservoir is less than 2 MAF at the end of September and forecasted to continue falling. [Comment:] According to the 2000 BO on the Trinity River ROD, BOR must consult with NMFS if they plan on going below the 600,000 AC carryover threshold. This needs to be started in the document as part of the seasonal operations	
39	62	[ATT1:] Appendix D [Page:] 4-91 [EIS Text:] 4.6.2.1 Grass Valley Creek Flows from Buckhorn Dam [Comment:] This action should be removed from Alternative 4 because it does not fall within the scope of the DEIS as previously noted.	Reclamation would increase flow from the Buckhorn Dam outlet works to Grass Valley Creek for maintenance of the outlet channel and improve juvenile and adult migration. The project scope includes managing listed species through operational changes to the CVP and SWP. Please see Appendix D, Attachment 1, Section D1.2.3.1.2 for more information on this project element.
39	63	[ATT1:] Appendix D. Attachment 1 [Page:] D1-3 [EIS Text:]] Reclamation and DWR have agreed to modify four key elements of the COA to address changes since COA was originally signed: (1) inbasin uses; (2) export restrictions; (3) CVP’s use of Harvey O Banks Pumping Plant (Banks Pumping Plant); and (4) periodic review. [Comment:] How do exports from the Trinity River Division fit into the Federal-State water sharing agreement and what protections are put in place to protect Trinity River Basin resources, especially protecting carryover storage levels and cold water pool. This needs to be clarified in the document.	The COA amendments do not modify the Trinity River ROD. Reclamation will continue to operate consistent with the Trinity River ROD.
39	64	[ATT1:] Appendix D. Attachment 1 [Page:] D1-11 [EIS Text:] Reclamation proposes to incorporate drought protection into water supply allocations [Comment:] What are the drought protection actions that Reclamation proposes to implement? These should be listed here. Without a detailed description this statement has no validity.	As stated in the EIS, in severe or worse droughts, Reclamation proposes to evaluate and implement alternative shutter configurations at Folsom Dam to allow temperature flexibility. Under Tier 4 operation at Shasta, appropriate performance metrics will be addressed under “Drought and Dry Year Actions” consistent with the “Governance” section of this Proposed Action. In the Delta, if drought conditions were observed (i.e., fall inflow conditions were less than 90% of historic flows), Reclamation and DWR would consider opening the DCC gates for up to 5 days for up to two events within this period to avoid D-1641 water quality exceedances.

Ltr#	Cmt#	Comment	Response
39	65	[ATT1:] Appendix D. Attachment 1 [Page:] D1-11 [EIS Text:] Reclamation proposes to rebuild storage and the cold water pool for the subsequent year. [Comment:] As part of this rebuilding of storage and coldwater pool for following years, priority should be given to limiting Trinity River Diversions to the minimum necessary to meet Trinity temperature objectives to ensure coldwater pool in Trinity Reservoir in subsequent years.	Reclamation will continue to follow all applicable laws and requirements when making decisions regarding how to make best use of a limited volume of Trinity River exports in concert with releases from Shasta Reservoir to help conserve cold water pools as described in Appendix D.
39	66	[ATT1:] Appendix D. Attachment 1 [Page:] D1-33 [EIS Text:] Other mechanical efforts to remove sediment and improve habitat conditions in the river have included cleansing of spawning riffles, dredging of sand from mainstem pools, side channel construction, and a pilot bank rehabilitation program to improve mainstem channel morphology. [Comment:] This statement needs to be updated with contemporary information. This is information that was current when the Trinity ROD was signed in 2000. The Trinity River Restoration program has implemented extensive channel rehabilitation projects over the past 14-years, and other restoration actions. Contact the BOR Trinity River Restoration Program office in Weaverville, CA to obtain contemporary information.	Appendix D has been updated to reflect more current information about actions performed under the Trinity River Restoration Program.
39	67	[ATT1:] Appendix D. Attachment 1 [Page:] D1-34 [EIS Text:] Current Science [Comment:] The "current science" of the Trinity River Restoration Program only discusses sediment transport monitoring but there are many other monitoring activities conducted by the Program that are pertinent to this section such as habitat monitoring, habitat use, juvenile populations, and adult populations. These need to be added to the current science section. Additionally, changes to the Trinity River Hatchery Coho Salmon production should be included due to their influence on natural populations.	Additional detail has been added to the EIS in Appendix D Section D1.1.1.1.1, Grass Valley Creek Flows, regarding the monitoring activities conducted by the Trinity River Restoration Program and Trinity River Hatchery production. The alternatives evaluated in the EIS do not propose changes to Trinity River Hatchery Coho Salmon production rates and any connected effect on natural populations of salmon from those operations would not be an effect of the Project.
39	68	[ATT1:] Appendix F [Page:] F-3	This commenter suggests that it is inappropriate to use Reclamation’s Temperature Model for the evaluation of effects on the Trinity River. The EIS does not use Reclamation’s Temperature Model for to evaluate these effects on the Trinity River. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding use of HEC5Q.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] F.5 Reclamation Temperature Model. The river temperature calculations are based on regulating reservoir release temperatures, river flows, and climatic data (Reclamation 2015). [Comment:] The Trinity River water temperature model developed for the Trinity River Restoration Program should be used for any analysis of Trinity River water temperatures as it is the most contemporary model which provides information and a timestep that is important to evaluating impacts on fishery resources.	
39	69	[ATT1:] Appendix F. Attachment 2-2 [Page:] 6 [EIS Text:] Attachment 2-2 CalSim II Model Assumptions Callouts [Comment:] What are the criteria for violating the Trinity Reservoir end-of-September minimum storage? The statement in the Table "Trinity EIS Preferred Alternative (600 TAF as able)" is impossible to evaluate if the criteria to define "as able" is not presented.	There is no prescriptive regulation requiring a specified storage pool in Trinity Lake at carryover (end of September or other).CalSim II studies generally try to hold carryover well above 600 TAF. Carryover at 600 TAF or lower happens only in cases where there has been a sequence of years that have been hydrologically limiting. These are conditions that are difficult to forecast and operate under. These low storage conditions are unavoidable without substantial changes in regulations.
39	70	[ATT1:] Appendix F. Attachment 2-2 [Page:] 2 [EIS Text:] When used with inputs derived from CalSim II outputs, changes in results between two scenarios should be considered at a monthly timestep, consistent with the changes in inputs. [Comment:] Evaluating water temperature results on a "monthly timestep" is not a valid assessment of the potential impacts of water temperature on the fishery resources.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.
39	71	[ATT1:] Appendix F. Attachment 2-7 [Page:] 2 [EIS Text:] HEC5Q was used for Sacramento, Trinity, American, and Stanislaus Rivers. [Comment:] Evaluating water temperature results on a "monthly timestep" is not a valid assessment of the potential impacts on water temperature. The water temperature model developed for the Trinity River should be used for this evaluation.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results and use of HEC5Q.
39	72	[ATT1:] Appendix F. Attachment 3-4 [Page:] No page number [EIS Text:] Temperature Results (HEC-5Q)	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding use of HEC5Q.

Ltr#	Cmt#	Comment	Response
		[Comment:] AS stated before, the Trinity River temperature model should be used to evaluate impacts on Trinity River temperatures.	
39	73	[ATT1:] Appendix F. Attachment 3-4 [Page:] No page number [EIS Text:] Temperature Results (HEC-5Q) [Comment:] Water temperature objectives for juvenile outmigrant salmonids adopted by the Trinity ROD need to be evaluated as part of this impact statement.	Commenter raises concern whether Trinity Restoration Program ROD is implemented in action alternatives. As noted in Appendix G, the "Trinity River Restoration Program Record of Decision controls Trinity River operations…" and is included in the modeling. See Master Response 7, Aquatic Resources, regarding water temperature thresholds and objectives for salmonids.
39	74	[ATT1:] Appendix F. Attachment 3- 4 [Page:] No page number [EIS Text:] Trinity River at Douglas City Table 18-1 to 18-4 and Figures 18-1 to 18-18 [Comment:] The water temperature results for Trinity River at Douglas City are not presented in the document so it is impossible to evaluate the impacts.	The EIS has been revised to remove reference to the Trinity River at North Fork and Trinity River at Douglas City. Temperature results at Trinity River below Lewiston Dam are provided in Appendix F.
39	75	[ATT1:] Appendix F. Attachment 3-4 [Page:] No page number [EIS Text:] Trinity River at North Fork Tables 19-1 to 19-4 and Figures 19-1 to 18-18 [Comment:] The water temperature results for Trinity River at North Fork are not presented in the document so it is impossible to evaluate the impacts.	The EIS has been revised to remove reference in Appendix F to the Trinity River at North Fork and Trinity River at Douglas City. Temperature results at Trinity River below Lewiston Dam are provided in Appendix F.
39	76	[ATT1:] Appendix F. Attachment 3-4 [Page:] No page number [EIS Text:] Table 1-1. Trinity River below Lewiston Dam, Monthly Temperature [Comment:] While the modeling differences are used to evaluate the alternatives indicate differences from the No Action (Trinity ROD) flows these No Action model results indicate that there is a problem with the calibration of the model used in evaluating all alternatives or the actions included as part of the no action alternative (Trinity Reservoir storage and diversions to the Sacramento) are compromising the ability to meet water temperature objectives adopted by the Trinity ROD. With the missing tables with data for the Trinity River at Douglas City and the North Fork, as well as no evaluation of outmigrant temperature objectives, it is impossible to evaluate the real impacts.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding use of CalSim II and HEC5Q.

Ltr#	Cmt#	Comment	Response
39	77	[ATT1:] Appendix G [Page:] G-5 [EIS Text:] Table G1-1. Footnote 1. Includes beneficial uses for the Trinity River within the Hoopa Valley Indian Reservation as designated by the Hoopa Valley Indian Reservation Water Quality Control Plan, which, in addition to beneficial uses shown, also designates the Lower Trinity River as a Wild and Scenic waterway, providing for scenic, fisheries, wildlife and recreational purposes. [Comment:] The standards presented in the Hoopa Valley Tribe's Water Quality Control Plan (https://www.epa.gov/wqs-tech/water-quality-standardsregulations-hoopa-valley-tribe, Table 3.4) need to be explicitly included in this document and evaluated.	Appendix G identified the Hoopa Valley Tribe's Water Quality Control Plan and the beneficial uses that it designates. The EIS evaluated potential impacts to those beneficial uses and constituents of concern in the river through an evaluation of how the alternatives would change flow in the rivers within the study area. The EIS used flow as a surrogate for water quality. Flow reductions in rivers could result in impacts to the beneficial uses the rivers support and increased concentrations of constituents of concern because there would be less water in the waterway to dilute runoff containing those constituents.
39	78	[ATT1:] Appendix G [Page:] G-16 [EIS Text:] G.1.2.2 Constituents of Concern [Comment:] Water temperature needs to be added as a constituent of concern and analyses presented in this appendix. Specifically for the Trinity River, temperature model results using the Trinity River water temperature models should be presented and the criteria for juvenile outmigrants and holding/spawning adult salmonids evaluated. Footnote 2 of Table G.1-5 notes water temperature is not a constituent of concern but this is not true.	As is noted in Section 5.2.1.1, the impact from potential changes in water temperature are evaluated in the fisheries analysis (Section 5.9, Aquatic Resources). See Master Response 7, Aquatic Resources, regarding water temperature thresholds and objectives for salmonids.
39	79	[ATT1:] Appendix G [Page:] G-16 [EIS Text:] Table G.1-5. Footnote 2 Water temperature is only a constituent of concern for the South Fork Trinity River and a TMDL is expected to be completed in 2019. [Comment:] This is an incorrect statement. Water temperature along the Trinity River and the lower Klamath River during various parts of the year(juvenile outmigration, adult Chinook holding and migration) are of concern and TRD operations directly affect meeting temperature standards. Water temperature constituent supports the designated beneficial uses of Cold Freshwater Habitat, Commercial and Sport Fishing, and Native American Culture.	As is noted in Section 5.2.1.1, the impact from potential changes in water temperature are evaluated in the fisheries analysis (Section 5.9, Aquatic Resources). See Master Response 7, Aquatic Resources, regarding water temperature analysis and temperature objectives for salmonids.
39	80	[ATT1:] Appendix J [Page:] J-5	Effects to aquatic resources in the Trinity River, Trinity Reservoir, and the Klamath are described in detail in Appendix O, Fish and Aquatic Resources.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] J.2.1.1 Changes in CVP and SWP Reservoir Elevation. "There are no ITAs within any of the reservoir inundation areas ... Therefore, the changes in reservoir elevations would not affect ITAs and are not analyzed in this EIS. [Comment:] While there are no ITAs within the inundation area of the Trinity River Division, changes in reservoir elevation, specifically when influencing cold water pool availability, can have dramatic effect on the ITA of fishery resources in the Trinity and lower Klamath River. This should be noted and evaluated in this section of the document.	Appendix J provides a summary of these effects; however, for detailed discussion the commenter should refer to Appendix O.
39	81	[ATT1:] Appendix J [Page:] J-6 [EIS Text:] Modeled maximum water temperatures under the action alternatives would be at or below the recommended 55°F criterion for spawning and egg incubation (USEPA 2003) from December through May, which would provide substantial protection for these life stages of Coho Salmon, which begin spawning in November, and Steelhead, which begin spawning in January and February. [Comment:] What location of the river is this temperature criterion being applied to? Temperature modeling data presented in Appendix F, Attachment 3-4, Table 1-1 presents water temperatures below Lewiston Dam. In critical years, the water release temperature from June through October is at or above the 55 F temperature criteria. As the water traveled from Lewiston Dam downstream to the major holding and spawning areas, water temperature would increase, further violating this criterion. Information relevant to the Trinity ROD/WQCB adult salmonid temperature standards is not presented in Appendix F.	Temperature objectives are: (1) 60 deg F at Douglas City from July 1 through Sep 14; (2) 56 deg at Douglas City from Sep 15 through Sep 30; and (3) 56 deg F at North Fork Trinity River from Oct 1 through Dec 31. Modeled exceedances of this criterion are results of model artifacts. Real-time operations would meet this criterion. Furthermore, comparative analysis of modeled results indicates that Trinity temperatures under all action alternatives would be similar to NAA temperatures.
39	82	[ATT1:] Appendix J [Page:] J-14 [EIS Text:] Although the modeled maximum water temperatures in September and October under all alternatives would exceed the 55°F USEPA (2003) criteria for spawning, egg incubation, and fry emergence and could compromise salmonid reproductive success, there would be little or no potential for adverse effects relative to the No Action Alternative. [Comment:] Generally, water temperature standards for adult salmonids are met on the Trinity River under current operations. If the model is showing that this is not the case then the model needs to be calibrated to ensure that it is unbiased and then the alternative modeling redone. As stated before, the water	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding water temperature analyses.

Ltr#	Cmt#	Comment	Response
		temperature model developed by USGS for the Trinity River should be used because this is the best available science/tool to evaluate water management on the Trinity River. Stating that there would be no or little adverse effects relative to the No Action Alternative is not a valid assessment of the impacts of Alternative 1 (or any of the alternatives,) because the model is not accurate and it is impossible to know what the results would be with a validated, unbiased model.	
39	83	[ATT1:] Appendix J [Page:] J-14 [EIS Text:] The modeled water temperature exceedances under Alternative 4 are negligible relative to both the USEPA (2003) criteria and the No Action Alternative (54.8°F), and are likely much less than the uncertainty associated with model results. Consequently, no adverse effects are expected. [Comment:] Stating that "no adverse effects are expects" because model results are similar between the No Action and alternative results is faulty logic when the model is obviously producing erroneous results. Adult water temperature objectives on the Trinity River are generally met but the model results, specifically for drier water years do not show this so the model is not properly calibrated.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding water temperature analyses.
39	84	[ATT1:] Appendix J [Page:] J-18 [EIS Text:] Table J.2-1. Potential Changes to Salmonid Populations. Alternative 1. Trinity River: Possible minimal, negative effect due to increased likelihood of egg mortality due to red scour, negligible effects from temperature overall. [Comment:] The information presented for Alternative 1 does not support the statement that there would be negligible temperature effects and no information is presented concerning scour impacts. Additionally, only adult temperature criteria were evaluated and the outmigrant salmonid temperature objectives need to be included in this evaluation.	Additional information regarding the potential for scour impacts can be found in Appendix X, Geology and Soils Technical Appendix. Detailed evaluation of effects to salmonids can be found in Appendix O, Fish and Aquatic Resources. Please see response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River.
39	85	[ATT1:] Appendix M [Page:] N-14 [EIS Text:] "but additionally would pulse flows between March 1 and April 15 to mobilize gravel, and implement October and November releases for Coho spawning, to the extent feasible."	Modifications to this section have been made in response to your comment.

Ltr#	Cmt#	Comment	Response
		[Comment:] It appears that this statement is referring to Alternative 4 and the potential additional Buckhorn Dam release into Grass Valley Creek but these will likely have little effect on lower Trinity and Klamath River water clarity and visual quality as stated. No information is presented to support this statement such and the magnitude of dilution that would be expected in the Trinity and lower Klamath.	
39	86	[ATT1:] Appendix M [Page:] Table N-1. [EIS Text:] Potential effects related to Trinity ROD flows and Lower Klamath augmentation flows. (Program-Level) [Comment:] No data are presented to support the conclusion "Potential long-term improvement on water clarity and overall visual quality" for all alternatives, including the no action alternative. Please provide a detailed description and supporting information on how this conclusion was developed.	Modifications to this section have been made in response to your comment.
39	87	[ATT1:] Appendix O [Page:] O-2 [EIS Text:] Table O.2-1 Focal Fish Species by Region of Occurrence [Comment:] Fall-run Chinook Salmon and Eulachon need to be added to this table. Northern DPS Green Sturgeon (Klamath-Trinity, species of special concern) should be added and included in this analysis.	The Upper Klamath-Trinity River ESU of Fall-Run Chinook Salmon and Eulachon have been added to Table O.2-1. Northern DPS Green Sturgeon is the only DPS known to occur in the Trinity River Region. Green Sturgeon (Northern DPS) were erroneously included in Table O.2-1 as Southern DPS; the table has been corrected. These modifications do not change conclusions identified in the EIS. Northern DPS Green Sturgeon were included in the Trinity River Region analysis. As described in Appendix O Section O.3 Evaluation of Alternatives, changes in flows under all alternatives were not likely to affect Northern DPS Green Sturgeon; therefore, Northern DPS of Green Sturgeon were not further described in the EIS.
39	88	[ATT1:] Appendix O [Page:] O-11 [EIS Text:] O.2.3.3 Fish in the Trinity River. American Shad [Comment:] American shad should be removed from this list. They are a non-native fish with an insignificant recreational fishery	American Shad is a recreational fishery known to occur in several rivers within the study area, including the Lower Klamath River. They were included in the Trinity River assessment for consistency with other sections of the EIS. No changes were made to the EIS.
39	89	[ATT1:] Appendix O [Page:] O-15 [EIS Text:] O.2.3.4 Hatcheries on the Trinity River	A footnote has been added to Appendix O to clarify the current Trinity River Fish Hatchery production for Coho and Steelhead: “In 2014 and 2015, Under EPIC v. Lehr, et al (2014), Steelhead and Coho Salmon production at the Trinity River Fish Hatchery has been temporarily reduced from 800,000 to no

Ltr#	Cmt#	Comment	Response
		[Comment:] Production of Coho Salmon and Steelhead should be updated to reflect reductions resulting for lawsuit settlement.	more than 448,000 steelhead and from 500,000 to 300,000 Coho Salmon until a hatchery genetics management plan can be adopted." This modification does not change conclusions identified in the EIS.
39	90	[ATT1:] Appendix O [Page:] O-103 [EIS Text:] O.3.1 Methods and Tools: HEC5Q, Reclamation Temperature Model [Comment:] The water temperature model developed by USGS (Jones et al 2016) for the Trinity River Restoration Program should be used to evaluate water temperature on the Trinity River. This model was developed specifically to evaluate water management actions on the Trinity River.	See Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	91	[ATT1:] Appendix O [Page:] O-104 [EIS Text:] The 2000 Record of Decision (Trinity River ROD) limits transbasin diversions to 55% of annual inflow on a 10-year average basis to increase the cold-water pool within Trinity Reservoir and improve conditions for Coho and Chinook Salmon spawning in the Trinity River. [Comment:] Nowhere in the ROD is this sharing stipulated. The only restriction in the ROD are annual flow volumes, carryover and temperature criteria. See previous comments submitted on the BA. This text needs to be deleted throughout the document or a legitimate citation supporting this statement provided.	In response to the comment, the ROC EIS at Section 3.3.2.1, Seasonal Operations, and in Appendix O, Section O.3.2.1.1, Seasonal Operations, has been changed to state, "The Trinity River ROD provides variable annual instream flows for the Trinity River from the Trinity River Division based on forecasted hydrology for the Trinity River Basin as of April 1st of each year, ranging from 369,000 acre-feet (af) in critically dry years to 815,000 af in extremely wet years, to meet legal and trust mandates for the restoration and protection of the Trinity River fishery;…".
39	92	[ATT1:] Appendix O [Page:] O-104 [EIS Text:] Reclamation maintains at least 600 TAF in Trinity Reservoir, except during the 10% to 15% of water years when Shasta Reservoir is drawn down. [Comment:] According to the 2000 BO on the Trinity River ROD, BOR must consult with NMFS if they plan on going below the 600,000 AC carryover threshold. This needs to be stated in the document as part of the seasonal operations. What are the criteria for the drawdown of Shasta Reservoir that would trigger violating the 600 TAF minimum carryover storage at Trinity?	Section O.3.2.1.1 of the EIS states that "End-of-water-year carryover in dry and critically dry water year types is addressed on a case-by-case basis to help conserve cold-water pools and meet water temperature objectives on the upper Sacramento and Trinity Rivers, as well as power production economics." The statement above specifically addresses the need for consultation for drawdowns below the 600 TAF minimum end-of-year carryover level in Trinity Reservoir (see Trinity ROD, Appendix C, Terms and Conditions 7b, p. C-5). Also see the EIS at Section 3.3.2.1, Seasonal Operations, for additional details on Trinity River seasonal operations and carryover storage. The EIS at Section 3.3.2.1 was updated to include, "As stated in the Trinity River ROD, "Implementation of drawdowns below the 600 TAF minimum end-of-year carryover level in Trinity Reservoir shall be determined by Reclamation, USFWS, and NMFS on a case-by-case basis in dry and critically dry water years."

Ltr#	Cmt#	Comment	Response
		Drawing down Trinity Reservoir below 600,000 AF has severe water temperature/cold water pool impacts for the year in which it is drawn below this threshold and for the following year(s) depending on the meteorology of the following year(s). For this reason, a specific drought scenario must be modeled and evaluated.	This modification does not change conclusions identified in the EIS.
39	93	[ATT1:] Appendix O [Page:] O-104 [EIS Text:] In general, habitat conditions in the Trinity River downstream of Lewiston Dam would be expected to improve with continued implementation of the Trinity River ROD under the No Action Alternative compared to current conditions. [Comment:] Information presented on the violation of adult salmonid temperature objectives on the Trinity River under the No Action alternative during dry and critically dry water year types do not support this statement. Additionally, no other data such as habitat or river health is presented to support this statement.	Information reported in the TRRP Phase 1 review (Buffington et al. 2014) support the statement that habitat conditions in the Trinity River downstream of Lewiston Dam would be expected to improve with continued implementation of the Trinity River ROD under the No Action Alternative compared to current conditions. Continued implementation of flow releases in the ROD in combination with continued restoration, is expected to improve habitat conditions under the NAA. The TRRP Phase 1 review (Buffington et al. 2014) concludes that conditions have improved as a result of the collective actions implemented during Phase 1 (P. 31), and that applying lessons learned has improved the effectiveness of restoration actions, while also acknowledging that geomorphic changes have been slower than originally expected. The text in Section O.3.2.1.1 has been revised for clarification. This modification does not change conclusions identified in the EIS.
39	94	[ATT1:] Appendix O [Page:] O-105 [EIS Text:] In addition, adaptive management is expected to improve the effectiveness of flow releases under the No Action Alternative compared to current conditions. [Comment:] The adaptive management aspect of the TRRP is not effective. The TRRP Phase I Review (Buffington et al 2014) recommended that the Program develop a Decision Support System based on an integrated set of models and defined objectives and measurable metrics. As was identified in the TRRP refinement review document (Headwaters Corporation. 2018. TRRP Refinements. Final Report to the Trinity River Restoration Program. 108 pp) the TRRP does not have a functioning adaptive management program so stating that is part of the program "to improve effectiveness of flows" is false and misleading.	The TRRP ROD includes an Adaptive Environmental Assessment and Management (AEAM) Program, which includes recommending possible adjustments to the annual flow schedule within the designated flow volumes provided for in the ROD. While the TRRP Phase 1 review (Buffington et al. 2014) provides recommendations for improving the AEAM program, it also suggests that the effectiveness of flow releases may improve over time. The TRRP Phase 1 review states: “A more complex channel morphology has been created within the rehabilitation sites which, in turn, likely increases the spatial and temporal diversity of stream temperatures, offering a broader range of thermal habitats. Increased flows and shaping of the hydrograph in the post-ROD era may further modulate and diversify stream temperatures compared to pre-ROD conditions.” No additional changes to the EIS were made in response to this comment.
39	95	[ATT1:] Appendix O [Page:] O-105	Please see response to comment 39-94.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Adaptive management is expected to improve the effectiveness of flow releases at achieving physical (geomorphic) or biological (fish habitat) goals within the constraints of the annual flow volumes and peak flow magnitudes required by the Trinity River ROD. [Comment:] As was identified in the TRRP refinement review document (Headwaters Corporation. 2018. TRRP Refinements. Final Report to the Trinity River Restoration Program. 108 pp) the TRRP does not have a functioning adaptive management program so stating that is part of the program "to improve effectiveness of flows" is misleading.	
39	96	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Modeled average October flow under the No Action Alternative is 375 cfs for most water year types with the exception of critically dry water years, when the modeled average October flow is 342 cfs. [Comment:] The minimum flows from Lewiston Dam to the Trinity River are 450 cfs from Oct 1-15, and 300 cfs from October 13-31 which is a monthly average of 373 cfs. So having a mean monthly flow of 342 cfs in October indicates that the model is not properly structured to meet the minimum flow requirements recommended in the Trinity ROD.	The EIS text was edited as follows: “Modeled average October flow under the No Action Alternative is 373 cfs for most water year types.” As shown in Figure 12-7 of Appendix F Attachment 3-2, modeling meets 373 cfs in all but one year. This result is due to model results in an extreme condition. Please review Master Response 6 Section titled “Common Modeling Concerns about Operation in Extreme Conditions”.
39	97	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Modeled average November flows range from to 678 cfs during above normal water years [Comment:] Why are modeled average flows in November 678 cfs in above normal water years when the prescribed flows in the Trinity ROD are 300 cfs? It is unlikely that higher flows in November are safety of dams releases because at this time of year the TRD is drawn down sufficiently to prevent safety of dams releases. The model needs to be properly parameterized to represent true No Action flows.	As shown in Figure 12-8 of Appendix F Attachment 3-2, modeled average is shifted by one anomalous year. This result is due to model results in an extreme condition. Please review Master Response 6 Section titled “Common Modeling Concerns about Operation in Extreme Conditions”.
39	98	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] "with the exception of critically dry water years, when the modeled average October flow is 342 cfs."	See response to comment 39-96.

Ltr#	Cmt#	Comment	Response
		[Comment:] These violations of minimum stream flows in October coupled with the results of going below the minimum carryover storage of 600 TAF in "10-15%" of the drier years would lead to large impacts on holding and spawning salmon.	
39	99	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Modeled average November flows range from to 678 cfs during above normal water years down to 275 cfs in critically dry years [Comment:] The minimum flows from Lewiston Dam to the Trinity River are 300 cfs in November so having a mean monthly flow of 275 cfs in November during critically dry years indicates that the model is not properly structured to meet the minimum flow requirements recommended in the Trinity ROD. These conditions need to be explicitly modeled and the true impacts disclosed.	See response to comment 39-97.
39	100	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Coho Salmon. Monthly average flows are typically at or above 300 cfs to maximize physical habitat for Coho Salmon spawning in November and December when the majority of spawning occurs, except in critically dry years when average monthly flows in November are expected to be 275 cfs [Comment:] The minimum flows from Lewiston Dam to the Trinity River are 300 cfs in November so having a mean monthly flow of 275 cfs in November during critically dry years indicates that the model is not properly structured to meet the minimum flow requirements recommended in the Trinity ROD. The impacts on Coho Salmon of these flows below those recommended in the Trinity ROD in November needs to be evaluated and pertinent information presented. There is no explicit data presented to evaluate the impacts of this action during critically dry water years.	See response to comment 39-97.
39	101	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Coho Salmon: While there is no difference in the implementation of seasonal operations in the Trinity River between the No Action Alternative and current conditions, the continued flow conditions are likely to continue to improve habitat conditions for Chinook Salmon under the No Action Alternative compared to current conditions.	See response to comment 39-93. Continued implementation of flow releases in the ROD in combination with continued restoration, is expected to improve habitat conditions under the NAA. The TRRP Phase 1 review (Buffington et al. 2014) concludes that conditions have improved as a result of the collective actions implemented during Phase 1 (P. 31), while also acknowledging that geomorphic changes have been slower than originally expected. Further explanation has been added

Ltr#	Cmt#	Comment	Response
		[Comment:] This statement is not supported by the sparse information presented, just average monthly flows, because under current conditions the minimum flows recommended by the Trinity ROD are released but in the modeling carried out to evaluate the No Action Alternative, the minimum flows are not met in Critically Dry water years in some months.	to the EIS text in Appendix O, Section O.3.2.1.4, Trinity River Record of Decision. This modification does not change conclusions identified in the EIS.
39	102	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Chinook Salmon. Monthly average flows typically range from 300 cfs to 373 cfs to maximize physical habitat for Chinook Salmon spawning from September to December, except in wet years when flows in December increase to 1,192 cfs, above normal water years when flows in November increase to 678 cfs and in December when flows increase to 652 cfs, and critically dry years when average monthly flows in November decrease to 275 cfs. [Comment:] Monthly average flows below Lewiston Dam should be 450 cfs in September, 373 cfs in October and 300 cfs in November and December. These are flows recommended in the Trinity ROD and the models need to be properly parameterized to reflect the true No Action alternative flow schedule.	See responses to comments 39-96 and 39-97. As shown in Figures 12-7 through 12-9 of Appendix F Attachment 3-2, model results meet Trinity ROD requirements except for anomalous conditions in 1-2 years. This result is due to model results in an extreme condition. Please review Master Response 6 Section titled “Common Modeling Concerns about Operation in Extreme Conditions”.
39	103	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Chinook Salmon. Monthly average flows typically ..., and critically dry years when average monthly flows in November decrease to 275 cfs. [Comment:] This flow level is unacceptable and will impact production. The impact of this action during critically dry water years needs to be explicitly evaluated. The Trinity River Restoration Program's fish production model was developed for just such an exercise and should be used to evaluate this flow.	See response to comment 39-97
39	104	[ATT1:] Appendix O [Page:] O-106 [EIS Text:] Chinook Salmon: While there is no difference in the implementation of seasonal operations in the Trinity River between the No Action Alternative and current conditions, the continued flow conditions are likely to continue to improve habitat conditions for Chinook Salmon under the No Action Alternative compared to current conditions. [Comment:] This statement is not supported by the sparse information presented, just average monthly flows, because under current conditions the minimum flows recommended by the Trinity ROD are released but in the	Please see response to comment 39-101.

Ltr#	Cmt#	Comment	Response
		modeling carried out to evaluate the No Action Alternative, the minimum flows are not met in Critically Dry water years in some months.	
39	105	[ATT1:] Appendix O [Page:] O-108 [EIS Text:] Trinity Lake. Under the No Action Alternative the modeled minimum storage in Trinity Lake ranges from approximately 1,000 TAF in wet water years to just under 600 TAF in critically dry water years, based on the 40-30-30 index. [Comment:] What is the "40-30-30 index"? There is no explanation or reference for this. As per the Trinity ROD, "BOR must consult with NMFS if they plan on going below the 600,000 AC carryover threshold. This needs to be stated in the document as part of the seasonal operations". Is this incorporated into this "new" management scheme?	The 40-30-30 index refers to the water year types as defined by the Sacramento Valley Water Year Hydrologic Classification (SWRCB 2000). See response to comment 39-92 regarding the need for consultation for drawdowns below the 600 TAF minimum end-of-year carryover level in Trinity Reservoir.
39	106	[ATT1:] Appendix O [Page:] O-110 [EIS Text:] "modeled maximum temperatures would exceed the temperature objectives in July, September, and October (Figure O.3-4 and Table O.3-2)." [Comment:] The information presented in the figure and Table referenced in this statement are not relevant to evaluating attainment of the water temperature objectives presented in Table O.3.1 because the information presented in Figure O.3-4 is below Lewiston Dam and the information presented in Table O.3-2 is below Trinity Dam, neither of which is pertinent to the water temperature objectives being evaluated.	Water temperature modeling for the Trinity River used the HEC-5Q model, which provides output for Trinity River below Trinity Dam and Trinity River below Lewiston using a monthly time step. The EIS has been revised to reflect this. While the HEC-5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature predictions, maximum monthly water temperatures from HEC-5Q were used to provide a conservative comparison to the values recommended by NCRWQCB (2018) which are based on a daily average water temperature. Refer to Master Response 7, Aquatic Resources, for additional discussion of the use of water temperature USEPA criteria and NCRWQCB objectives in the EIS for the purposes of comparison of alternatives. The title for Table O.3.2, in Appendix O, Section O.3.2.1.3, Trinity River Downstream of Lewiston Dam, has been updated to reflect the location as being downstream of Lewiston Dam not Trinity Dam. This modification does not change conclusions identified in the EIS.
39	107	[ATT1:] Appendix O [Page:] O-110 [EIS Text:] Table O.3-2. Maximum Trinity River Water Temperatures below Trinity Dam for the Period October–September, Average of All Water Year Types (Differences >1°F Are Highlighted)] [Comment:] This Table is not relevant to evaluating water temperatures, especially given the warming that can occur in Lewiston Reservoir, this gives	Refer to response to Comment 39-106. The title for Table O.3.2 has been updated to reflect the location as being downstream of Lewiston Dam not Trinity Dam.

Ltr#	Cmt#	Comment	Response
		an overly optimistic evaluation of water release temperatures to the Trinity River. Additionally, the water temperature data presented in this table indicate that during the time period that the adult water temperature objectives are in place (July-Dec) the temperature targets and Douglas City and the North Fork would never be met with these release temperatures below Trinity Dam. As notes on page O-110, "Maintaining a flow of 450 cfs during the summer and early fall was found to meet the water temperature objectives for the Trinity River when water released from Lewiston Dam was 53°F or less (USFWS 1999: 203)."	
39	108	[ATT1:] Appendix O [Page:] O-110 [EIS Text:] "Modeled monthly flows in the Trinity River from July to October are typically equal to or greater than 450 cfs except in October when flows are reduced to maximize physical spawning habitat for salmonids." [Comment:] This is not the case based on information presented on page O-106 where the following information is presented: "with the exception of critically dry water years, when the modeled average October flow is 342 cfs." Monthly mean October flows released in accordance with the Trinity ROD should be 372 cfs for all water year types. As stated earlier, the model needs to be parameterized to make these summer temperature releases and fall/winter spawning and rearing minimum flows from Lewiston are met.	See response to comment 39-96
39	109	[ATT1:] Appendix O [Page:] O-110 [EIS Text:] Coho Salmon. Under the No Action Alternative, monthly average water temperatures meet the NCRWQCB (2018) objectives. [Comment:] This statement is not supported by the information presented. Use of the proper water temperature model developed for the Trinity River would provide the necessary information to evaluate the alternatives. These analyses need to be redone using the Trinity water temperature model and at the proper control points.	The EIS text was revised as follows: "Under the No Action Alternative, monthly average water temperatures meet the NCRWQCB (2018) objectives (Figure O.3-3 and Table O.3-1)." The modeling uses maximum water temperature, which have a greater exceedance probability compared to the maximum 7-day average of the daily maximum used by USEPA, or the daily average temperature used by NCRWQCB. Full modeling results showing probabilities of exceedance are provided in Appendix F. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	110	[ATT1:] Appendix O [Page:] O-110 [EIS Text:] Coho Salmon. While the HEC-5Q output used in this assessment is based on a monthly time step and does not provide daily water temperature	The EIS text is accurate within the context of the analysis methods used. Water temperature objectives recommended by NCRWQCB (2018) are for daily average water temperature that are not to be exceeded (Table O.3-1).

Ltr#	Cmt#	Comment	Response
		predictions, maximum monthly water temperatures from HEC-5Q provide the closest available approximation to the values recommended by NCRWQCB (2018) and are therefore used herein to provide a coarse-level comparative analysis for each alternative. [Comment:] This is not an accurate statement. Use of the Trinity River water temperature model would provide the proper information to use for this analysis. Using maximum monthly water temperatures does not provide a closest approximation to the recommended values as these are monthly mean values.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding water temperature modeling.
39	111	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Coho Salmon. While there would be no difference in the implementation of seasonal operations in the Trinity River between the No Action Alternative and current conditions, the continued temperature conditions are likely to continue to improve habitat conditions for Coho Salmon under the No Action Alternative compared to current conditions. [Comment:] This statement is not supported by the limited, and really insufficient, information presented, because the proper water temperature model was not used and the model results show significant violations of the adult water temperature standards in some months.	See response to comment 39-94 which discusses increased habitat complexity and spatial and temporal diversity of stream temperatures. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding water temperature modeling.
39	112	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Chinook. Under the No Action Alternative, monthly average water temperatures meet the NCRWQCB (2018) objectives or the Trinity River (Table 0.3-1); [Comment:] This is an incorrect statement. Based on the information presented in Figure O.3-3 indicate that there are many months that the water temperature objectives will not be met. As stated before, the proper model to conduct this evaluation is the model developed by USGS for the Trinity River. Additionally, the model used appears not be properly calibrated because in most years the water temperature objectives are met.	Water temperatures presented in Figure O.3-3 are below the water temperature objectives presented in Table O.3-1. Water temperatures were assessed based on two model outputs 1) the modeled monthly average and 2) the modeled monthly maximum. The modeled monthly averages were below the NCRWQCB objectives but since these temperatures were based on the average for the entire month, the modeled maximum monthly temperatures were also provided and compared to the NCRWQCB objectives. Maximum water temperature output for all water year types was used as a conservative approach to discuss the effects of the different alternatives. As stated in Appendix O, the "modeled maximum monthly temperatures would exceed the temperature objectives in July, September, and October (Figure O.3-4 and Table O.3-2)." Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results to USEPA criteria and NCRWQCB objectives.

Ltr#	Cmt#	Comment	Response
39	113	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Chinook Salmon:"…juvenile Spring-Run Chinook Salmon which typically rear in freshwater for up to a year". [Comment:] This is not an accurate statement. Spring Chinook Salmon in the Trinity River predominately exhibit the ocean life history pattern similar to fall Chinook Salmon	Section O.3.2.1.3 has been revised to more accurately describe Chinook life history.
39	114	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Chinook Salmon. Elevated temperatures in these months may affect juvenile… [Comment:] In addition to affecting juveniles, these elevated temperatures may affect adult Chinook Salmon. The information presented in Figure O3.4 suggest that adult water temperature objectives would not be met in August through October which is a critical holding and spawning period for spring Chinook Salmon and for early fall Chinook Salmon spawning. This impact needs to be thoroughly evaluated.	Water temperatures in the Trinity River downstream of Lewiston Dam during these periods are generally well below the criteria. Based on modeling results, the probability of water temperatures exceeding 60°F during July and September is less than 10 percent, while the probability of exceeding 55°F in September is less than 10 percent and less than 20 percent during October. Please see Master Response 7, Aquatic Resources, regarding comparison of water temperature modeling outputs to USEPA criteria and NCRWQCB objectives.
39	115	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Chinook Salmon. Therefore, continued implementation under the No Action Alternative would likely continue to benefit Chinook Salmon by maintaining water temperature improvements seen under current conditions. [Comment:] This statement is not supported by the limited, and really insufficient, information presented, because the proper water temperature model was not used and the model results show significant violations of the adult water temperature standards in some months.	See response to comment 39-93. Please also see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling outputs to USEPA criteria and NCRWQCB objectives.
39	116	[ATT1:] Appendix O [Page:] O-111 [EIS Text:] Steelhead: While there would be no difference in the implementation of seasonal operations in the Trinity River between the No Action Alternative and current conditions, the continued temperature conditions are likely to continue to improve habitat conditions for Steelhead under the No Action Alternative compared to current conditions.	See response to comment 39-93. Please also see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling outputs to USEPA criteria and NCRWQCB objectives.

Ltr#	Cmt#	Comment	Response
		[Comment:] This statement is not supported by the limited, and really insufficient, information presented, because the proper water temperature model was not used and the model results show significant violations of the adult water temperature standards in some months.	
39	117	[ATT1:] Appendix O [Page:] O-114 [EIS Text:] …physical and biological response seen after about half of the channel restoration projects were built indicated that the program was largely successful [Comment:] This is an incorrect statement. The large magnitude of habitat increases that are needed to meet the goal of the Trinity ROD to restore anadromous fish populations to pre-dam levels were not being realized.	The statement referenced was intended to describe the findings reported in Buffington et al., (2014) that the program as a whole had many successes and was generally on the right track, not that the program's ultimate goal of restoring anadromous fish populations to pre-dam levels had been achieved (Buffington et al. 2014: 32-33). The EIS text has been edited in Section O.3.2.1.4, Trinity River Record of Decision, for clarification.
39	118	[ATT1:] Appendix O [Page:] O-118 [EIS Text:] Mechanical channel rehabilitation includes the removal of riparian berms (44 areas), establishing side channels (3 sites), and increased flows to promote creation of alternate bar sequences. [Comment:] This information is severely outdated and is from 1999/2000. The TRRP has updated information concerning the number and types of restoration actions it is intending to implement.	The EIS Appendix O text in Section O.3.2.1.4, Trinity River Record of Decision, was revised to include more updated information on restoration actions. This modification does not change conclusions identified in the EIS.
39	119	[ATT1:] Appendix O [Page:] O-120 [EIS Text:] Coho. With continued monitoring and evaluation of the effects of flow releases and restoration actions under the Trinity River ROD, modifications in the effectiveness of these actions to improve outcomes is likely to result in increased benefits to Coho Salmon populations in the Trinity River under the No Action Alternative compared to current conditions. [Comment:] The adaptive management aspect of the TRRP is not effective. The TRRP Phase I Review (Buffington et al 2014) recommended that the Program develop a Decision Support System based on an integrated set of models and defined objectives and measurable metrics. This has not been developed, an initial start was made but the effort needed to make this an effective Decision/Adaptive management system has not been expended. See also the most current review (CITATION) on the program status and effectiveness. THE TRRP does not have a functioning adaptive management program so	Refer to the response to Comment 39-94. The Trinity River ROD (AEAM) Program is intended to monitor physical and biological effects in the Trinity River resulting from implementing the Trinity River ROD components and to inform future management and implementation actions. Buffington et al. (2014) acknowledged the need for better integration and understanding of site and system responses to alternative management actions to inform adaptive management, and recommend a Decision Support System (DSS) to support this finding. The report also identifies how lessons learned were used to inform and change the design strategy during Phase 1 (a type of adaptive management). The continued application of lessons learned are likely to improve the effectiveness of future management actions, while the added integration of a DSS could further accelerate physical and biological response to restoration activities.

Ltr#	Cmt#	Comment	Response
		stating that is part of the program "modifications in the effectiveness of these actions to improve outcomes " is false and misleading.	
39	120	[ATT1:] Appendix O [Page:] O-121 [EIS Text:] Chinook Salmon. With continued monitoring and evaluation of the effects of flow releases and restoration actions under the Trinity River ROD, modifications in the effectiveness of these actions to improve outcomes is likely to result in increased benefits to Chinook Salmon populations in the Trinity River under the No Action Alternative compared to current conditions. [Comment:] The adaptive management aspect of the TRRP is not effective. The TRRP Phase I Review (Buffington et al 2014) recommended that the Program develop a Decision Support System based on an integrated set of models and defined objectives and measurable metrics. As was identified in the TRRP refinement review document (Headwaters Corporation. 2018. TRRP Refinements. Final Report to the Trinity River Restoration Program. 108 pp) the TRRP does not have a functioning adaptive management program so stating that is part of the program "to improve effectiveness of flows" is false and misleading.	Please see response to comment 39-119.
39	121	[ATT1:] Appendix O [Page:] O-121 [EIS Text:] Steelhead. With continued monitoring and evaluation of the effects of flow releases and restoration actions under the Trinity River ROD, modifications in the effectiveness of these actions to improve outcomes is likely to result in increased benefits to Steelhead populations in the Trinity River under the No Action Alternative compared to current conditions. [Comment:] The adaptive management aspect of the TRRP is not effective. The TRRP Phase I Review (Buffington et al 2014) recommended that the Program develop a Decision Support System based on an integrated set of models and defined objectives and measurable metrics. As was identified in the TRRP refinement review document (Headwaters Corporation. 2018. TRRP Refinements. Final Report to the Trinity River Restoration Program. 108 pp) the TRRP does not have a functioning adaptive management program so stating that is part of the program "to improve effectiveness of flows" is false and misleading.	Please see response to comment 39-119.
39	122	[ATT1:] Appendix O	The analysis of alternatives for this EIS includes consideration of likely future conditions through 2030, including potential effects of climate change. Within

Ltr#	Cmt#	Comment	Response
		[Page:] O-122 [EIS Text:] The potential effects of climate change are expected to influence future habitat conditions; however, the effects within the timeframe of this analysis (i.e., up to 2030) are likely to be minor. [Comment:] With the hottest July ever recorded occurring this year (2019), the effects of climate change are happening now and waving them away by stating the effects are likely to be minor "within the timeframe of this analysis" is an attempt to avoid doing the analysis. Contemporary regional climate change models should be used to model the change in meteorology and hydrology and these results incorporated into reservoir management tools to evaluate the Project effects with climate change. Why are impacts of climate change discussed for Grass Valley Creek/Buckhorn Dam operations but they are not discussed in with the operations of the TRD?	this timeframe, the measurable effects of climate change are expected to be relatively minor due to annual variability in climactic conditions and associated uncertainty in predicting future short-term conditions. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	123	[ATT1:] Appendix O [Page:] O-123 [EIS Text:] Coho Salmon: climate change may negatively affect habitat conditions for anadromous fish in the future; however, the effects leading up to 2030 are expected to be relatively minor compared to current conditions. [Comment:] With the hottest July ever recorded occurring this year (2019), the effects of climate change are happening now and waving them away by stating the effects are likely to be minor "within the timeframe of this analysis" is an attempt to avoid doing the analysis. Contemporary regional climate change models should be used to model the change in meteorology and hydrology and these results incorporated into reservoir management tools to evaluate the Project effects with climate change. Why are concerning of impacts of climate change discussed for Grass Valley Creek/Buckhorn Dam operations but they are not discussed in with the operations of the TRD?	Please see response to comment 39-122.
39	124	[ATT1:] Appendix O [Page:] O-123 [EIS Text:] Chinook Salmon: climate change may negatively affect habitat conditions for anadromous fish in the future; however, the effects leading up to 2030 are expected to be relatively minor compared to current conditions. [Comment:] With the hottest July ever recorded occurring this year (2019), the effects of climate change are happening now and waving them away by stating	Please see response to comment 39-122.

Ltr#	Cmt#	Comment	Response
		the effects are likely to be minor "within the timeframe of this analysis" is an attempt to avoid doing the analysis. Contemporary regional climate change models should be used to model the change in meteorology and hydrology and these results incorporated into reservoir management tools to evaluate the Project effects with climate change. Why are concerning of impacts of climate change discussed for Grass Valley Creek/Buckhorn Dam operations but they are not discussed in with the operations of the TRD?	
39	125	[ATT1:] Appendix O [Page:] O-123 [EIS Text:] Steelhead: climate change may negatively affect habitat conditions for anadromous fish in the future; however, the effects leading up to 2030 are expected to be relatively minor compared to current conditions. [Comment:] With the hottest July ever recorded occurring this year (2019), the effects of climate change are happening now and waving them away by stating the effects are likely to be minor "within the timeframe of this analysis" is an attempt to avoid doing the analysis. Contemporary regional climate change models should be used to model the change in meteorology and hydrology and these results incorporated into reservoir management tools to evaluate the Project effects with climate change. Why are concerning of impacts of climate change discussed for Grass Valley Creek/Buckhorn Dam operations but they are not discussed in with the operations of the TRD?	Please see response to comment 39-122.
39	126	[ATT1:] Appendix O [Page:] O-125 [EIS Text:] Coho. Furthermore, the higher magnitude flow releases associated with preventative and emergency pulse flows may overtop berms along the river channel in some locations and increase the risk of stranding juveniles as flow returns to the baseflow (Reclamation 2016: 7-61). [Comment:] Information on the flow magnitudes that would cause trapping behind the berms and an assessment of the area of berms that can potentially trap juvenile salmonids should be included in this document to assess the potential impacts. The TRRP has an extensive dataset on the morphology of the upper 40-miles of the Trinity River to help with this evaluation.	As stated in Reclamation (2016: 7-61): "Flow rates less than 1,000 cfs typically would not be expected to overtop berms, many of which have been removed by the Trinity River Restoration Program in the last decade as part of 5 extensive channel rehabilitation projects (Hoopa Valley Tribe et al. 2011, Buffington et al. 2014, TRRP 2014.)" During years when late-summer augmentation flow releases are necessary, more than 50% of the releases are expected to be less than 1,000 cfs and 90% less than 1,500 cfs, with only about 5% exceeding 2,000 cfs and a maximum release of 3,800 cfs (Reclamation 2016: 7-61). Additionally, many of the berms in question have already been remediated by TRRP and many more will be removed as additional restoration is completed. As of October 2016 when the LTP DEIS was drafted: "More than half of the 44 original channel rehabilitation sites (nearly 15 miles of the 40 mile upper

Ltr#	Cmt#	Comment	Response
			Trinity River Restoration reach) have had channel rehabilitation treatments (Buffington et al. 2014; TRRP 2014).” Refer to Comment 39-118 for more detail. Furthermore, most juvenile Coho Salmon, Chinook Salmon, and Steelhead rearing in the Trinity River during August and September are at a larger parr or pre-smolt size and generally prefer deeper, swifter habitats than fry-sized fish; therefore, relatively small numbers of salmon and steelhead parr would be expected to move into shallow areas inundated at the higher stage extents of augmentation flows. Thus, the overall impacts of potential juvenile fish stranding due to late-summer flow increases associated with the Klamath LTP are expected to be relatively minor.
39	127	[ATT1:] Appendix O [Page:] O-125 [EIS Text:] Spring-run Chinook Salmon. The potential effects of increased stream flow on adult holding behavior are uncertain but are expected to be minimal. Spawning does not typically begin until mid-September, but pre-spawning and spawning behavior of some portion of the populations could be affected by flow releases during September. .... Overall, flow-related effects of continued implementation of the Klamath LTP may be minor for Spring-Run Chinook Salmon populations under the No Action Alternative compared with current conditions. [Comment:] The issue on increase hybridization between spring- and fall-run Chinook Salmon should be evaluated and discussed. CDFW (Trinity Program staff) have expressed concerns that the fall flows attract fallrun Chinook Salmon into the spawning grounds earlier than normal which increases the possibility of spawning with spring-run Chinook Salmon, resulting in more hybridization and dilution of gene pools of these two runs.	We are not aware of data or reports that will allow for evaluation of the magnitude of potential increase in hybridization between spring-run and fall-run Chinook salmon associated with increased late-summer flow releases that occur in some years. Revisions have been made to the EIS text in Appendix O, Section O.3.2.1.4, Trinity River Record of Decision, to address hybridization.
39	128	[ATT1:] Appendix O [Page:] O-126 [EIS Text:] Fall-run Chinook Salmon: For this reason, increased summer flow associated with continued implementation of the Klamath LTP under the No Action Alternative is expected to have considerable, positive effects on the Fall-Run Chinook Salmon population in the Trinity River compared with current conditions.	Please see response to comment 39-127.

Ltr#	Cmt#	Comment	Response
		[Comment:] While the expected benefits of enhanced August and September flows to increasing survival by improving conditions, there are some potential drawbacks that need to be discussed, primarily increased interbreeding with spring-run Chinook Salmon. CDFW (Trinity Program staff) have expressed concerns that the fall flows attract fall-run Chinook Salmon into the spawning grounds earlier than normal which increases the possibility of spawning with spring-run Chinook Salmon, resulting in more hybridization and dilution of gene pools of these two runs.	
39	129	[ATT1:] Appendix O [Page:] O-126 [EIS Text:] Steelhead. Potential effects of Klamath LTP augmentation flows on juvenile Steelhead include short-term access to additional habitats on the channel margins and floodplains, potential for stranding when flow recedes following augmentation, and vulnerability to predation during movement caused by fluctuating flows. Overall, increased late-summer flow associated with continued implementation of the Klamath LTP under the No Action Alternative is expected to have moderate, positive effects on the Steelhead population in the Trinity River compared with current conditions. [Comment:] Information on the flow magnitudes that would cause trapping behind the berms and an assessment of the area of berms that can potentially trap juvenile salmonids should be included in this document to assess the potential impacts. The TRRP has an extensive dataset on the morphology of the upper 40-miles of the Trinity River to help with this evaluation.	Please see response to comment 39-126.
39	130	[ATT1:] Appendix O [Page:] O-127 [EIS Text:] Pacific Lamprey. Additionally, as with juvenile salmonids, ammocoetes that move to rearing habitats on the high flow floodplain may become stranded when flow recedes. Overall, effects of increased flow on the Trinity River Pacific Lamprey population due to implementation of the Klamath LTP are expected to be minimal, with little to no difference between current conditions and the No Action Alternative. [Comment:] Information on the flow magnitudes that would cause trapping behind the berms and an assessment of the area of berms that can potentially trap juvenile salmonids should be included in this document to assess the potential impacts. The TRRP has an extensive dataset on the morphology of the upper 40-miles of the Trinity River to help with this evaluation.	Please see response to comment 39-126.

Ltr#	Cmt#	Comment	Response
39	131	[ATT1:] Appendix O [Page:] O-127 [EIS Text:] Potential changes to aquatic resources due to Trinity River water temperatures. ..except in July of critically dry years when water temperatures are predicted to be 2.4°F to 2.7°F (4% to 5%) warmer at these sites, respectively (Reclamation 2016: 5-36). [Comment:] It is unclear why information is presented for July when the augmented flows are only to occur in August and September. Is there a water release error in the dataset that is being used to evaluate this? There should be no changes in July water temperatures resulting from implementation of the Klamath LTP and the increases of 2.4F to 2.7F in July during critically dry water years is very concerning because this will compromise the ability to meet the adult Chinook salmon water temperature objectives established by the Trinity ROD and WQCB. These water temperature modeling exercises need to be thoroughly reevaluated using the Trinity River water temperature model developed by USGS.	The completed water temperature modelling conducted for the Klamath LTP EIS predicted increased water temperatures in July of critically dry years (Reclamation 2016: 5-34 through 5-36). These predicted increases were related to changes in Trinity Lake operations, impacting storage in Trinity Lake storage or release rate and residence time in Lewiston Reservoir. Notably, the 2.4°F to 2.7°F increases in question during critically dry years (based on model predictions in the Klamath LTP EIS) were for the sites “below Lewiston Dam” and “Douglas City”. At these locations, July monthly average water temperatures for critically dry years were predicted to remain well below the daily average water temperature objective set by the Regional Water Quality Control Board, North Coast Region (SWRCB 1990) for the Trinity River below Lewiston Dam, which stipulates a maximum of 60°F from July 1 to September. See Master Response 6, Hydrologic Modeling and Surface Water Resources and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	132	[ATT1:] Appendix O [Page:] O-130 [EIS Text:] O.3.2.1.5 Grass Valley Creek Flows from Buckhorn Dam. In general, however, and over a longer timeframe, it is anticipated that climate change will result in more extreme conditions (e.g., increasing the frequency and magnitude of flooding and drought), which could negatively affect fish species using streams as migration corridors, over-summering locations, and spawning grounds. [Comment:] In other sections of this document concerns over climate change are ignored with the statement "Because of the relatively short timeframe, climate change is anticipated to have relatively minimal effects on habitat conditions relative to current conditions over the 10-year period leading up to 2030." but this is the first section that more accurately portrays the impacts of climate change and this should be reflected throughout the document. The impacts of climate change will not be isolated to the Grass Valley Creek watershed as portrayed here. The impacts of climate change will likely have a significant impact on habitat/water temperature and should be completely evaluated as part of this document. Not accounting for this know change in the environment is irresponsible and ignores the current scientific knowledge of the anticipate	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
		impacts of climate change on meteorology and hydrology throughout the regions evaluated in this document (Trinity, Sacramento-San Joaquin).	
39	133	[ATT1:] Appendix O [Page:] O-130 [EIS Text:] Potential changes to aquatic resources due to climate change in Grass Valley Creek. Coho Salmon. If predicted climate trends are accurate, the effects of increasingly extreme conditions could negatively affect Coho Salmon populations in GVC leading up to 2030 compared to current conditions. [Comment:] The statement "If predicted climate trends are accurate…" contradicts previous statements throughout the document that climate change is expected to have a minimal effect due to the short timeframe of 2030. The impacts of climate change will likely have a significant impact on habitat/water temperature and should be completely evaluated as part of this document. Not accounting for this anticipated change in the environment ignores the current scientific knowledge of the anticipate impacts of climate change on meteorology and hydrology. The impacts of climate change will not be isolated to the Grass Valley Creek watershed as portrayed here.	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	134	[ATT1:] Appendix O [Page:] O-130 [EIS Text:] Potential changes to aquatic resources due to climate change in Grass Valley Creek. Chinook Salmon. If climate predictions are accurate, Chinook Salmon in 2030 will experience the effects of an increase in extreme dry-to-wet precipitation events. Extreme low flow conditions limit migration of adults, whereas extreme high flow conditions have the potential to displace juveniles and scour redds. Compared with current conditions, an increase in the occurrence of extreme dry-to-wet precipitation events may negatively affect populations of Chinook Salmon in GVC. [Comment:] The statement "If predicted climate trends are accurate…" contradicts previous statements throughout the document that climate change is expected to have a minimal effect due to the short timeframe of 2030. The impacts of climate change will likely have a significant impact on habitat/water temperature and should be completely evaluated as part of this document. Not accounting for this anticipated change in the environment ignores the current scientific knowledge of the anticipate impacts of climate change on meteorology and hydrology. The impacts of climate change will not be isolated to the Grass Valley Creek watershed as portrayed here.	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
39	135	[ATT1:] Appendix O [Page:] O-130 [EIS Text:] Potential changes to aquatic resources due to climate change in Grass Valley Creek. Steelhead. If climate predictions are accurate, Steelhead in 2030 will experience the effects of an increase in extreme dry-to-wet precipitation events. Extreme low flow conditions limit migration of adults and have the potential to create dangerous temperature conditions for over-summering juveniles. Extreme high flow conditions have the potential to displace juveniles and scour redds. Compared with current conditions, an increase in the occurrence of extreme dry-to-wet precipitation events may negatively affect populations of Steelhead in GVC. [Comment:] The statement "If predicted climate trends are accurate…" contradicts previous statements throughout the document that climate change is expected to have a minimal effect due to the short timeframe of 2030. The impacts of climate change will likely have a significant impact on habitat/water temperature and should be completely evaluated as part of this document. Not accounting for this anticipated change in the environment ignores the current scientific knowledge of the anticipate impacts of climate change on meteorology and hydrology. The impacts of climate change will not be isolated to the Grass Valley Creek watershed as portrayed here.	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	136	[ATT1:] Appendix O [Page:] O-131 [EIS Text:] Potential changes to aquatic resources due to climate change in Grass Valley Creek. Lamprey. If climate predictions are accurate, Pacific Lamprey in 2030 will experience the effects of an increase in extreme dry-to-wet precipitation events. Extreme low flow conditions have the potential to create dangerous temperature conditions for over-summering ammocoetes. Extreme high flow conditions have the potential to displace ammocoetes and scour redds. Compared with current conditions, an increase in the occurrence of extreme dry-to-wet precipitation events may negatively affect populations of Pacific Lamprey in GVC. [Comment:] The statement "If predicted climate trends are accurate…" contradicts previous statements throughout the document that climate change is expected to have a minimal effect due to the short timeframe of 2030. The impacts of climate change will likely have a significant impact on habitat/water	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
		temperature and should be completely evaluated as part of this document. Not accounting for this anticipated change in the environment ignores the current scientific knowledge of the anticipate impacts of climate change on meteorology and hydrology. The impacts of climate change will not be isolated to the Grass Valley Creek watershed as portrayed here.	
39	137	[ATT1:] Appendix O [Page:] O-132 [EIS Text:] Potential changes to aquatic resources from the decreasing storage capacity of Buckhorn Reservoir on Grass Valley Creek. Coho Salmon. In 2030 Buckhorn Reservoir will be entering its 39th year of a predicted lifespan of 40 to 50 years. Decreased storage capacity in Buckhorn Reservoir has the potential to increase water temperatures, negatively affecting juvenile Coho Salmon over-summering in GVC. Compared with current conditions, increased water temperatures resulting from decreased storage capacity may negatively affect populations of Coho Salmon in GVC. [Comment:] The presumed benefits from enhanced flows from Buckhorn Dam into Grass Valley Creek will do nothing for the salmonids and lamprey in the creek if the water temperatures are unsuitable. The decreasing storage capacity and climate change needs to be evaluated together to accurately evaluate the impacts of actions in Grass Valley Creek as well as the mainstem Trinity River.	The text has been edited to include an evaluation of water temperature effects of decreased storage capacity along with climate change. See Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding inclusion of climate change in water temperature modeling. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	138	[ATT1:] Appendix O [Page:] O-132 [EIS Text:] Potential changes to aquatic resources from the decreasing storage capacity of Buckhorn Reservoir on Grass Valley Creek. Chinook Salmon. In 2030 Buckhorn Reservoir will be entering its 39th year of a predicted lifespan of 40 to 50 years. Decreased storage capacity in Buckhorn Reservoir has the potential to increase water temperatures in GVC. However, compared with current conditions, increased water temperatures resulting from decreased storage capacity will have minimal effects on populations of Chinook Salmon in GVC. [Comment:] The presumed benefits from enhanced flows from Buckhorn Dam into Grass Valley Creek will to nothing for the salmonids and lamprey in the creek if the water temperatures are unsuitable. The decreasing storage capacity and climate change needs to be evaluated together to accurately evaluate the impacts of actions in Grass Valley Creek as well as the mainstem Trinity River.	The text has been edited to include an evaluation of water temperature effects of decreased storage capacity along with climate change. See Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding inclusion of climate change in water temperature modeling. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
39	139	[ATT1:] Appendix O [Page:] O-132 [EIS Text:] Potential changes to aquatic resources from the decreasing storage capacity of Buckhorn Reservoir on Grass Valley Creek. Steelhead. In 2030 Buckhorn Reservoir will be entering its 39th year of a predicted lifespan of 40 to 50 years. Decreased storage capacity in Buckhorn Reservoir has the potential to increase water temperatures, negatively affecting juvenile Steelhead over-summering in GVC. Compared with current conditions, increased water temperatures resulting from decreased storage capacity may negatively affect populations of Steelhead in GVC. [Comment:] The presumed benefits from enhanced flows from Buckhorn Dam into Grass Valley Creek will to nothing for the salmonids and lamprey in the creek if the water temperatures are unsuitable. The decreasing storage capacity and climate change needs to be evaluated together to accurately evaluate the impacts of actions in Grass Valley Creek as well as the mainstem Trinity River.	The text has been edited to include an evaluation of water temperature effects of decreased storage capacity along with climate change. See Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding inclusion of climate change in water temperature modeling. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	140	[ATT1:] Appendix O [Page:] O-132 [EIS Text:] Potential changes to aquatic resources from the decreasing storage capacity of Buckhorn Reservoir on Grass Valley Creek. Pacific Lamprey. In 2030 Buckhorn Reservoir will be entering its 39th year of a predicted lifespan of 40 to 50 years. Decreased storage capacity has the potential to increase water temperatures, negatively affecting Pacific Lamprey ammocoetes over-summering in GVC. Compared with current conditions, increased water temperatures resulting from decreased storage capacity may negatively affect populations of Pacific Lamprey ammocoetes in GVC. [Comment:] The presumed benefits from enhanced flows from Buckhorn Dam into Grass Valley Creek will to nothing for the salmonids and lamprey in the creek if the water temperatures are unsuitable. The decreasing storage capacity and climate change needs to be evaluated together to accurately evaluate the impacts of actions in Grass Valley Creek as well as the mainstem Trinity River.	The text has been edited to include an evaluation of water temperature effects of decreased storage capacity along with climate change. See Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding inclusion of climate change in water temperature modeling. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
39	141	[ATT1:] Appendix O [Page:] O-173 [EIS Text:] O.3.3 Alternative 1 – Project-Level Effects. Model results predict that under Alternative 1, storage volume in Trinity Lake would remain the same as under the No Action Alternative in most water year types. However, in	Model results are based on water year type scenarios, and the values discussed in the EIS cover several defined water year types ranging from wet water years to critically dry water years. Also, please refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources for information on the use of specific

Ltr#	Cmt#	Comment	Response
		dry and critically dry water years (40-30-30 Index) storage volume would increase throughout the entire year compared to the No Action Alternative (Figure O.3-14). On average, storage is expected to increase by 63 TAF under Alternative 1 in dry and critically dry years. [Comment:] Appendix F, Table 46-1. Trinity Import - Clear Creek Tunnel, Monthly Diversion indicates that diversions from Trinity to Clear Creek would increase in Dry (+7,619 AF) and Critically Dry (+41,033 AF) water years. While the information presented in the diversion table and that presented on the text are averages across many years, it does not evaluate the impacts that would occur during a dry period. Modeling a dry period is necessary to provide an accurate portrayal of impacts on carryover, water temperatures in the Trinity River, and volumes of water available for diversion.	models and drought analysis, and Master Response 7, Aquatic Resources, regarding requests for additional modeling.
39	142	[ATT1:] Appendix O [Page:] O-174 [EIS Text:] The effects of changes in reservoir storage conditions as they relate to water temperature can be assessed by looking at temperatures in the Trinity River downstream of Trinity Dam. [Comment:] Using water temperatures below Trinity Dam is not a valid assessment at water temperatures that may affect meeting Trinity River water temperature objectives because attainment of Trinity water temperature objectives during the summer/fall is highly dependent on diversion patterns through Clear Creek Tunnel. Due to this dependency of water temperature release temperature, diversions, and Lewiston releases, water temperature modeling needs to use a suite of models including Trinity Reservoir, Lewiston Reservoir, and Trinity River USGS water temperature model.	Water temperature downstream of Trinity Dam is provided in Appendix O; however, the water temperature objectives for the Trinity River are discussed in comparison with the modeled water temperatures downstream of Lewiston Dam for the No Action Alternative (See Section O.3.2.1.3, Trinity River Downstream of Lewiston Dam) and each of the other Alternatives (See Section O.3.3.1.1, Seasonal Operations, Section O.3.5.1.1, Seasonal Operations, Section O.3.7.1.1, Seasonal Operations, and Section O.3.9.1.1, Seasonal Operations). Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	143	[ATT1:] Appendix O [Page:] O-174 [EIS Text:] Maximum modeled water temperatures in the Trinity River downstream of Trinity Dam are generally similar under Alternative 1 compared to the No Action Alternative except in August when temperatures are approximately 4°F higher under Alternative 1 and in October when temperatures are approximately 4°F lower under Alternative 1 compared to the No Action Alternative. [Comment:] A difference in release temperature of 4F in August during a dry or critically dry can greatly impact attainment of adult salmonid NCRWQCB	No anadromous fish are found between Trinity Dam and Lewiston Dam. Anadromous fish in the Trinity River are found downstream of Lewiston Dam. The EIS analyzed the effects of water temperature on anadromous fish (including Spring-Run Chinook Salmon) in the Trinity River downstream of Lewiston Dam under various flow conditions and water year types. For example, see Section O.3.2.1.3, Trinity River Downstream of Lewiston Dam, and Section O.3.3.1.1, Seasonal Operations.

Ltr#	Cmt#	Comment	Response
		standards in the Trinity River, negatively impacting migrating and holding spring Chinook Salmon.	
39	144	[ATT1:] Appendix O [Page:] O-175 [EIS Text:]] Under Alternative 1 flows in the Trinity River downstream of Lewiston Dam would be similar to flows under the No Action Alternative in most months and water year types. [Comment:] Spawning and rearing flows under the Trinity ROD, October-March are the same for all water year types and the No Action flows identified in this paragraph are not consistent with the flow recommendations of the Trinity ROD. For example flows in December should be 300 cfs, not 1192 cfs); November should be 300 cfs, not 678 cfs, February should be 300 cfs not 528 cfs as presented for Wet and normal water years. The water models need to be properly calibrated to ensure that minimum flows in the Trinity are consistent with the Trinity ROD flows.	See response to comment 39-96.
39	145	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] In critically dry years, flows under Alternative 1 would decrease compared to the No Action Alternative in September and October from 870 cfs to 818 cfs and from 342 cfs to 311 cfs, respectively. November flows would increase in critically dry years from 275 cfs to 300 cfs compared to the No Action Alternative. [Comment:] The model data for Alternative 1 are presented as providing increased flows in November during critically dry years of 300 cfs, but this is the base flow of the Trinity ROD which is the No Action Alternative. The 275 cfs identified for the No Action Alternative would be a violation of the Trinity ROD. As noted before, there seems to be some systematic modeling errors specifically in the No Action Alternative accounting for the Trinity ROD. These model errors would propagate throughout the modeling and provide invalid impact results. The assumptions and calibration of the models needs to be corrected and the models re-run.	See response to comment 39-96.
39	146	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Coho Salmon. Flows in the Trinity River downstream of Lewiston Dam would generally be similar under Alternative 1 compared to the No	The EIS text in Section O.3.3.1.1, Seasonal Operations, specifies that minor differences (<10%) in modeled flow between the NAA and Alternative 1 occur in November and December of some water year types, and these minor differences are not expected to result in a detectable effect on Coho Salmon spawning or juvenile rearing habitat (Figure 5.17 of USFWS and HVT 1999).

Ltr#	Cmt#	Comment	Response
		Action Alternative. Minor differences (<10%) in November and December of some water year types may affect spawning and juvenile rearing habitat for Coho Salmon. Based on previous flow habitat relationship studies in the Trinity River (USFWS 1999), this difference in flow is not expected to result in a detectable effect on Coho Salmon spawning or juvenile rearing habitat (USFWS 1999). [Comment:] The statement "the percent change in total WUA in this flow range is negligible, citing USFWS&HVT 1999 is incorrect. Based on the graphic presented on page 123 of USFWS and HVT 1999, changes in Chinook Salmon and Coho Salmon at flows from 500 cfs (NAA) and ~830 cfs (Alt 1) are roughly 25% decrease in WUA for Chinook fry, 20% decrease in WUA for Coho fry, 30% decrease in WUA for Chinook juveniles and 25% decrease in WUA for Coho juveniles. These are not negligible changes (decreases) and impacts to rearing habitat and resulting production need to be evaluated.	The EIS Text also identifies a relatively large (58%) increase in modeled flow between the NAA (528 cfs) and Alt 1 (833 cfs) during February of above normal water year types. These differences were not characterized as "negligible". Section O.3.3.1.1 has been revised to include information on possible decreases in available habitat.
39	147	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Coho Salmon. Flows in February of above normal water years would increase by approximately 58% under Alternative 1 (833 cfs) compared to the No Action Alternative (528 cfs). This increase in flow could increase the likelihood of Coho Salmon egg mortality due to redd scour, potentially resulting in reduced incubation success in areas where local conditions contribute to substantial mobilization of gravel in the redds. [Comment:] In addition to potential impacts of redd scour, increased flows during this emergence time period can result in premature displacement of fry and increased mortality. This needs to be evaluated to assess the impacts on Coho Salmon.	Appendix O of the EIS at Section O.3.3.1.1, Seasonal Operations, has been revised to include a clarification of sediment mobilization conditions: "This increase in flow is not expected to result in redd scour based on previous studies in the Trinity River which reported sand and gravel substrates became mobile at flows of around 2,700 cfs or greater (McBain and Trush 1997)."
39	148	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Spring-run Chinook Salmon. Flows in the Trinity River downstream of Lewiston Dam would generally be similar under Alternative 1 compared to the No Action Alternative. Minor differences (<10%) in November of some water year types may affect spawning and juvenile rearing habitat for Spring-Run Chinook Salmon. Based on previous flow habitat relationship studies in the Trinity River (USFWS 1999), this difference in flow is not expected to result in a detectable effect on Spring-Run Chinook Salmon spawning or juvenile rearing habitat (USFWS 1999).	See response to comment 39-146.

Ltr#	Cmt#	Comment	Response
		[Comment:] The statement "the percent change in total WUA in this flow range is negligible, citing USFWS&HVT 1999 is incorrect. Based on the graphic presented on page 123 of USFWS and HVT 1999, changes in Chinook Salmon and Coho Salmon at flows from 500 cfs (NAA) and ~830 cfs (Alt 1) are roughly 25% decrease in WUA for Chinook fry, 20% decrease in WUA for Coho fry, 30% decrease in WUA for Chinook juveniles and 25% decrease in WUA for Coho juveniles. These are not negligible changes (decreases) and impacts to rearing habitat and resulting production need to be evaluated.	
39	149	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Spring Chinook Salmon. Flows in above normal water years in February would increase by approximately 58% under Alternative 1 (833 cfs) compared to the No Action Alternative (528 cfs). This increase in flow could increase the likelihood of Spring-Run Chinook Salmon egg mortality due to redd scour, potentially resulting in reduced incubation success in areas where local conditions contribute to substantial mobilization of gravel in the redds. [Comment:] In addition to potential impacts of redd scour, increased flows during this emergence time period can result in premature displacement of fry and increased mortality. This needs to be evaluated to assess the impacts on spring Chinook Salmon and be evaluated by the Trinity Fish Production Model.	Appendix O of the EIS at Section O.3.3.1.1, Seasonal Operations has been revised to include a clarification of sediment mobilization conditions: "This increase in flow is not expected to result in redd scour based on previous studies in the Trinity River which reported sand and gravel substrates became mobile at flows of around 2,700 cfs or greater (McBain and Trush 1997)."
39	150	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Fall-run Chinook Salmon. Flows in the Trinity River downstream of Lewiston Dam would generally be similar under Alternative 1 compared to the No Action Alternative. Minor differences (<10%) in November of some water year types may affect spawning habitat for Fall-Run Chinook Salmon. Based on previous flow habitat relationship studies in the Trinity River (USFWS 1999), this difference in flow is not expected to result in a detectable effect on Fall-Run Chinook Salmon spawning habitat (USFWS 1999). [Comment:] The statement "the percent change in total WUA in this flow range is negligible, citing USFWS&HVT 1999 is incorrect. Based on the graphic presented on page 123 of USFWS and HVT 1999, changes in Chinook Salmon and Coho Salmon at flows from 500 cfs (NAA) and ~830 cfs (Alt 1) are roughly 25% decrease in WUA for Chinook fry, 20% decrease in WUA for Coho fry, 30% decrease in WUA for Chinook juveniles and 25% decrease in	See response to comment 39-146.

Ltr#	Cmt#	Comment	Response
		WUA for Coho juveniles. These are not negligible changes (decreases) and impacts to rearing habitat and resulting production need to be evaluated.	
39	151	[ATT1:] Appendix O [Page:] O-175 [EIS Text:] Fall-run Chinook Salmon. Flows in February of above normal water years would increase by approximately 58% under Alternative 1 (833 cfs) compared to the No Action Alternative (528 cfs). This increase in flow could increase the likelihood of Fall-Run Chinook Salmon egg mortality due to redd scour, potentially resulting in reduced incubation success in areas where local conditions contribute to substantial mobilization of gravel in the redds. [Comment:] In addition to potential impacts of redd scour, increased flows during this emergence time period can result in premature displacement of fry and increased mortality. This needs to be evaluated to assess the impacts on spring Chinook Salmon and be evaluated by the Trinity Fish Production Model.	Appendix O of the EIS at Section O.3.3.1.1, Seasonal Operations has been revised to include a clarification of sediment mobilization conditions: “This increase in flow is not expected to result in redd scour based on previous studies in the Trinity River which reported sand and gravel substrates became mobile at flows of around 2,700 cfs or greater (McBain and Trush 1997).”
39	152	[ATT1:] Appendix O [Page:] O-176] [EIS Text:] Potential changes to aquatic resources due to variation in temperature [Comment:] The information presented in this section needs to be remodeled using the Trinity River water temperature model and not presented by averaging monthly data across all years because this hides any critical differences, especially during dry and critically dry water years.	Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models and drought analysis and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and requests for additional modeling.
39	153	[ATT1:] Appendix O [Page:] O-178 [EIS Text:] O.3.3 Alternative 1 – Project-Level Effects. Coho Salmon Maximum temperatures under Alternative 1 in August and September exceed the NCRWQCB (2018) objectives for the Trinity River. Under both the No Action Alternative and Alternative 1, water temperatures exceed the NCRWQCB objectives during this time; however, further increases in temperature that would occur under Alternative 1 may further reduce juvenile Coho Salmon rearing success. [Comment:] As previously stated, the models used to evaluate flow and water temperature are not properly calibrated because under the Trinity ROD/No Action Alternative water temperatures in August and September are virtually	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding water temperature analyses.

Ltr#	Cmt#	Comment	Response
		always met so these systematic violations should not be showing up in the model results. Additionally, the Trinity River water temperature model should be used for this analysis.	
39	154	[ATT1:] Appendix O [Page:] O-178 [EIS Text:] O.3.3 Alternative 1 – Project-Level Effects. Spring Chinook Salmon. Maximum August and September temperatures would exceed the NCRWQCB (2018) objectives for the Trinity River under both the No Action Alternative and Alternative 1. However, the further increases in temperature that would occur under Alternative 1 may reduce Spring-Run Chinook Salmon adult migration and spawning success. Conversely, the reduced maximum temperatures predicted under Alternative 1 in July meet the NCRWQCB (2018) objectives for the Trinity River and are likely to improve Spring-Run Chinook Salmon adult migration compared to conditions under the No Action Alternative, [Comment:] This analysis should use the Trinity River water temperature model and evaluate the attainment of NCRWQCB water temperature objectives for holding and spawning adult salmonids. Specifically for Spring Chinook Salmon, the objectives in July-August are to protect holding adults and reduce prespawning mortality. This needs to be properly evaluated to determine impacts between alternatives. The water temperature model used in this analysis is not properly calibrated because the NCRWQCB water temperature standards for the Trinity River are virtually always met in July. Meeting the water temperature objectives in July does not necessarily provide a population level benefit because spring Chinook Salmon must hold in the upper river until spawning so any perceived benefit will be lost by exceeding water temperature standards in August and September, leading to increases in pre-spawning mortality and decreases in gamete viability.	Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with NCRWQB objectives.
39	155	[ATT1:] Appendix O [Page:] O-179 [EIS Text:] O.3.3 Alternative 1 – Project-Level Effects. Fall Chinook Salmon. Maximum August and September temperatures would exceed the NCRWQCB (2018) objectives for the Trinity River under both the No Action Alternative and Alternative 1. However, the further increases in temperature that would	Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with NCRWQB objectives.

Ltr#	Cmt#	Comment	Response
		occur under Alternative 1 may negatively affect Fall-Run Chinook Salmon adult migration compared to the No Action Alternative. Conversely, reduced October temperatures predicted under Alternative 1 would improve spawning conditions compared to conditions under the No Action Alternative. [Comment:] This analysis should use the Trinity River water temperature model and evaluate the attainment of NCRWQCB water temperature objectives for holding and spawning adult salmonids. Additionally, trading off one life history phase ("adult migration negatively affected") for another ("improve spawning conditions") in Alternative 1 is an illogical argument because if increased mortality associated with temperature induced stress during migration negatively impacts the population and this cannot be made up by meeting spawning temperature criteria later in the year.	This analysis does not attempt to balance effects between lifestages; there is a statement of differing effects. Please also see response to Comment 39-154 and response to Comment 39-47.
39	156	[ATT1:] Appendix O [Page:] O-179 [EIS Text:] O.3.3 Alternative 1 – Project-Level Effects. Fall Chinook Salmon. Water temperature and habitat conditions within this section of the Trinity River are heavily influenced by several large tributaries that enter the Trinity River (e.g., the North Fork Trinity River, New River, and the South Fork Trinity River). As a result, minor changes in reservoir operations are likely to be undetectable this far downstream. Results of previous water temperature modeling for the Trinity River (USFWS 1999) predicted a difference of approximately 1°F in water temperature for flows of 300 cfs and 450 cfs near RM 43 with smaller temperature differences expected downstream of RM 43 to the confluence of the Trinity and Klamath Rivers. Therefore, changes in flow and water temperature under Alternative 1 would not affect Green Sturgeon. [Comment:] While at certain times of the year, accretion from tributaries to the Trinity River can be very large, at other times of the year flows released from Lewiston Dam can dominate the flow of the Trinity River, and given the typical cold temperature of releases this can greatly affect the water temperature of the Trinity River at downstream locations. Based on some of the modeling results previously presented indicating some large differences during August (4F), water temperature modeling using spawning, egg development, and rearing criteria for Green Sturgeon should be conducted using the Trinity Water temperature model developed by USGS.	Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	157	[ATT1:] Appendix O [Page:] O-373	Edits to the EIS have been made in Section O.3.5.1.1, Seasonal Operations. Please also see responses to comments 39-146 through 39-154.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] O.3.5 Alternative 2 – Project-Level Effects, O.3.5.1 Trinity River [Comment:] All comments provided for the No Action alternative and alternative 1 concerning habitat and water temperature starting on page O-176 through O-178 are pertinent to the information presented for Alternative 2 since the information is virtually the same.	
39	158	[ATT1:] Appendix O [Page:] O-501 [EIS Text:] O.3.7 Alternative 3 – Project-Level Effects, O.3.7.1 Trinity River [Comment:] All comments provided for the No Action alternative and alternative 1 concerning habitat and water temperature starting on page O-176 through O-178 are pertinent to the information presented for Alternative 3 since the information is virtually the same.	See response to comment 39-157. Edits to the EIS have been made in Section O.3.7.1.1, Seasonal Operations.
39	159	[ATT1:] Appendix O [Page:] O-627 [EIS Text:] O.3.9 Alternative 4 – Project-Level Effects. O.3.9.1 Trinity River [Comment:] All comments provided for the No Action alternative and alternative 1 concerning habitat and water temperature starting on page O-176 through O-178 are pertinent to the information presented for Alternative 4 since the information is virtually the same.	See response to comment 39-157. Edits to the EIS have been made in Section O.3.9.1.1, Seasonal Operations.
39	160	[ATT1:] Appendix O [Page:] O-627 [EIS Text:] Figure O.3-132. Average Monthly Flow in the Trinity River downstream of Lewiston Dam for the No Action Alternative and Alternative 4 during Wet Years. [Comment:] The flow schedule presented in Figure O.3-132 for the No Action Alternative (Trinity ROD+Klamath LTP) for a wet year does not accurately represent ROD flows. From mid-October to mid-April, flows below Lewiston should be 300 cfs. This is the first place the actual flow below Lewiston is presented in a figure which shows the error in the modeling for Trinity releases. Also, during wet water years for the Trinity water year classification, peak flows are 8,500 cfs for the Trinity ROD. The modeling needs to be redone to accurately reflect Trinity flows and all related diversion, carry-over and water temperatures need to be reevaluated. Some of these problems were identified in flow data presented in various alternative evaluations but this is the first place	The commenter expresses concerns with agreement between modeled results and Trinity River flow requirements. Trinity flow requirements are based on Trinity water year types and are consistent with the TRRP ROD. Figures for Trinity flow in all water year types are presented in Appendix F.

Ltr#	Cmt#	Comment	Response
		where the entire hydrograph was presented. Hydrographs for all water years types should be presented for all water year types.	
39	161	[ATT1:] Appendix O [Page:] O-637 [EIS Text:] Figure O.3-137. Water Temperature in the Trinity River below Lewiston Dam during the Driest Periods of the Year under the No Action Alternative and Alternative 4. [Comment:] Explain how the water temperatures below Lewiston Dam are different between the No Action Alternative and Alternative 4 during the summer months when the flows releases for both alternatives are the same, the Trinity ROD recommendations? See Figure O.3.132. The water temperature modeling needs to be redone using the Trinity River water temperature model.	Water temperatures in the Trinity River downstream of Lewiston Dam are influenced by reservoir storage and transfer operations at Trinity and Lewiston reservoirs as well as by flow releases downstream. Please also see Master Response 5, Adequacy of Analysis and Mitigation, regarding requests for additional detail, Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.
39	162	[ATT1:] Appendix O [Page:] O-782 [EIS Text:] O.3.12 Summary of Impacts. Table O.3-76. Summary of Aquatic Resources Impacts. Trinity River. Seasonal Operations. Potential changes to aquatic resources from changes in reservoir storage [Comment:] There is no modeling presented on reservoir operations during drought periods which is a critical assessment because these are the periods when impacts on fishery resources can be large. Averaging over the entire model time period masks potential significant impacts during single or series of years.	The modeling includes drought periods within the history of record; however, as a forecasting tool, the modeling is incapable of predicting precise periods of drought. Please also see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding modeling capabilities and drought analysis.
39	163	[ATT1:] Appendix O [Page:] O-783 [EIS Text:] O.3.12 Summary of Impacts. Table O.3-76. Summary of Aquatic Resources Impacts. Trinity River. Trinity River Record of Decision. Potential changes to aquatic resources due to implementing variable annual flow regime under the Trinity ROD [Comment:] The information presented do not support the statements that the action alternatives are similar to the No Action Alternative. There are significant decreases in rearing habitat during some time periods (see specific comments above) and there are violations of adult temperature criteria during critical months (see specific comments). Also, there is no analysis on the juvenile salmonid outmigrant temperature objectives which are part of the Trinity ROD which is part of the No Action	The summary conclusion that implementing the variable annual flow regime under the Trinity ROD is likely to continue to improve habitat conditions for aquatic resources under the NAA, as well as the other alternatives, is true even though there may be negative impacts for one or more aquatic species/resources during specific periods (e.g., months) and water year types. Please see response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with temperature objectives.

Ltr#	Cmt#	Comment	Response
		alternative. Additionally, the Trinity River water temperature model should be used for this evaluation.	
39	164	[ATT1:] Appendix O [Page:] O-784 [EIS Text:] O.3.12 Summary of Impacts. Table O.3-76. Summary of Aquatic Resources Impacts. Trinity River. Trinity River Record of Decision. Potential changes to aquatic resources due to Trinity River flow during late summer [Comment:] Water temperature objectives are not properly evaluated using the proper Trinity River water temperature model and during some of the summer/fall months there are significant violations of water temperature objectives. The model data presented is not appropriate to evaluate the attainment of temperature objectives because it is based on a monthly time step and was not generated by the appropriate model (the Trinity River water temperature model).	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding the use of specific models, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with temperature objectives.
39	165	[ATT1:] Appendix O [Page:] O-784 [EIS Text:] O.3.12 Summary of Impacts. Table O.3-76. Summary of Aquatic Resources Impacts. Trinity River. Trinity River Record of Decision. Potential changes to aquatic resources due to Trinity River water temperatures [Comment:] The water temperature modeling for the Trinity River is flawed. The proper model for this evaluation is the Trinity River water temperature model. Providing monthly water temperature model results can mask severe violations of water temperature objectives that have significant impacts of fishery resources. There are violations of adult temperature criteria during critical months (see specific comments above) so stating that the impacts are similar to the No Action alternative are incorrect. Also, there is no analysis on the juvenile salmonid outmigrant temperature objectives which are part of the Trinity ROD (No Action alternative). Both adult and outmigrant water temperature objectives adopted by the Trinity ROD (No Action Alternative) need to be evaluated in the EIS.	Each of the alternatives includes the continued implementation of the Trinity River ROD, as described in Appendix O. Flow releases and temperature criteria in the ROD are included in the modeling and would help restore and maintain fishery resources in the Trinity River by improving physical habitat for fish, including temperature regimes for anadromous salmonids. The ROD also includes high springtime flow releases, which correspond to the juvenile anadromous salmonid smolt outmigration period. A description of juvenile outmigrant water temperature objectives in the ROD has been added to Section O.3.2.1.4. Please also see Master Response 6, *Hydrologic Modeling and Surface Water Resources*, regarding the use of specific models, and Master Response 7, *Aquatic Resources*, regarding the choice of models used for evaluation of effects and regarding comparison of water temperature modeling results with temperature objectives.
39	166	[ATT1:] Appendix O [Page:] O-837 [EIS Text:] O.3.13.1 Trinity River	Illegal marijuana cultivation is not a reasonably foreseeable action, therefore, no changes have been made to the EIS.

Ltr#	Cmt#	Comment	Response
		[Comment:] Cumulative impacts related to marijuana cultivation in the Trinity Basin needs to be included in the cumulative impacts analysis due to the impacts this activity has on Coho Salmon habitat in tributaries and resulting populations impacts.	
39	167	[ATT1:] Appendix O [Page:] O-837 [EIS Text:] O.3.13.1 Trinity River. Several management components have been established to mitigate for the adverse effects of dam construction on the Trinity River and are included in the Trinity River Restoration Program (TRRP) and the Trinity River ROD. The TRRP includes instream flow management, mechanical channel rehabilitation, fine and coarse sediment management, watershed restoration, infrastructure improvement, and adaptive environmental assessment and monitoring, and is focused on the 40-mile section of the Trinity River from Lewiston Dam to the confluence with the North Fork Trinity River (TRRP 2014). [Comment:] While the channel rehabilitation activities of the TRRP are focused on the upper 40 miles of the Trinity below Lewiston Dam, the watershed, flow management (juvenile outmigrant temperature objectives), watershed, and adaptive management components of the program throughout the Trinity watershed. The scope of the program should be accurately presented here.	Section O.3.13.1, Trinity River, has been revised to include more information about the scope of the TRRP.
39	168	[ATT1:] Appendix O [Page:] O-838 [EIS Text:] O.3.13.1.1 Seasonal Operations. Alternatives 1-4. There were no adverse effects identified. Therefore, there would be no cumulative effects on aquatic biological resources under the action alternatives. [Comment:] As noted in comments on the impacts of the alternatives, there are adverse effects associated with the alternatives. There were large reductions of fry rearing habitat for Coho Salmon and Chinook Salmon, impacts on summer/fall holding and spawning temperatures, and no evaluation of juvenile salmonid outmigrant temperature objectives for the Trinity ROD. These need to be assessed as part of the cumulative effects analysis.	As summarized in Table O.3-76 in Appendix O, Section O.3.12, Summary of Impacts, adverse effects of Trinity River Seasonal Operations on aquatic biological resources under Alternatives 1 through 4 would be minimal and are not expected to contribute to adverse cumulative effects. Please refer to response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River.
39	169	[ATT1:] Appendix O [Page:] O-838	As summarized in Table O.3-76 in Appendix O, adverse effects of Trinity River Record of Decision aquatic biological resources under Alternatives 1 through 4 would be beneficial and are not expected to contribute to adverse

Ltr#	Cmt#	Comment	Response
		[EIS Text:] O.3.13.1.2 Trinity River Record of Decision. Alternatives 1-4. There were no adverse effects identified. Therefore, there would be no cumulative effects on aquatic biological resources under the action alternatives. [Comment:] As noted in comments on the impacts of the alternatives, there are adverse effects associated with the alternatives. There were large reductions of fry rearing habitat for Coho Salmon and Chinook Salmon, impacts on summer/fall holding and spawning temperatures, and no evaluation of juvenile salmonid outmigrant temperature objectives for the Trinity ROD. These need to be assessed as part of the cumulative effects analysis.	cumulative effects. Please refer to response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River.
39	170	[ATT1:] Appendix O [Page:] O-839 [EIS Text:] O.3.13.1.3 Long Term Plan to Protect Adult Salmon in the Lower Klamath River. Alternatives 1-4. There were no adverse effects identified. Therefore, there would be no cumulative effects on aquatic biological resources under the action alternatives. [Comment:] As noted in comments on the impacts of the alternatives, there are adverse effects associated with the alternatives. There were large reductions of fry rearing habitat for Coho Salmon and Chinook Salmon, impacts on summer/fall holding and spawning temperatures, and no evaluation of juvenile salmonid outmigrant temperature objectives for the Trinity ROD. These need to be assessed as part of the cumulative effects analysis.	Effects of the Long Term Plan to Protect Adult Salmon in the Lower Klamath River on aquatic biological resources under Alternatives 1 through 4 would be beneficial or minimal and would not contribute to adverse cumulative effects. Please refer to response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River.
39	171	[ATT1:] Appendix O [Page:] O-840 [EIS Text:] O.3.13.1.4 Grass Valley Creek Flows from Buckhorn Dam. Alternatives 1-4. There were no adverse effects identified. Therefore, there would be no cumulative effects on aquatic biological resources under the action alternatives. [Comment:] As noted in comments on the impacts of the alternatives, there are adverse effects associated with the alternatives. There were large reductions of fry rearing habitat for Coho Salmon and Chinook Salmon, impacts on summer/fall holding and spawning temperatures, and no evaluation of juvenile salmonid outmigrant temperature objectives for the Trinity ROD. These need to be assessed as part of the cumulative effects analysis.	As summarized in Table O.3.76 in Appendix O, adverse effects of Grass Valley Creek Flows from Buckhorn Dam on aquatic biological resources under Alternatives 1 through 4 would be minimal and are not expected to contribute to adverse cumulative effects. Please refer to response to comment 39-165 regarding outmigrant temperature objectives for the Trinity River.
39	172	[ATT1:] Appendix Q [Page:] Q-1	Please see response to comment 39-51.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Q.1.1 Regional Economics. Q.1.1.1 Trinity River Region. [Comment:] Only ocean recreational fisheries economics are presented. All recreational fisheries affected by water management in the Trinity need to be included in the impact analysis and the impacts to the regional economics for Trinity, Humboldt and Del Norte Counties.	
39	173	[ATT1:] Appendix Q [Page:] Q-13 [EIS Text:] Q.1.3 Commercial and Recreational Fisheries Economics [Comment:] Inriver fisheries need to be included in this analysis. This would include Chinook Salmon and Steelhead fisheries.	Please see response to comment 39-51.
39	174	[ATT1:] Appendix Q [Page:] Q-17 [EIS Text:] Q.2.1.3 Fisheries Effects. Changes in CVP and SWP operations under the alternatives could change the salmon population. Commercial, sport, and tribal fishing primarily rely upon Fall–Run Chinook Salmon because the populations of other runs of salmon are substantially lower. [Comment:] This is true for Central Valley and ocean fisheries, but Steelhead support a significant fishery in the Trinity and lower Klamath River and this needs to be assessed. Also, the fishery in Trinity reservoir needs to be assessed because of the influence of reservoir levels on this fishery.	Please see response to comment 39-51.
39	175	[ATT1:] Appendix Q [Page:] Q-30 [EIS Text:] Q.2.3.1.3 Potential fisheries-related changes to the regional economy. Appendix O, Aquatic Resources Technical Appendix also describes that the population of salmon along the SONCC would be higher under all action alternatives compared to No Action Alternative. [Comment:] This statement concerning the benefits of Alternative 1 to coastal fisheries is not supported by the information presented in Appendix O. Impacts due to violations of water temperature objectives and periodic decreases in habitat will decrease productivity of Trinity Chinook Salmon stocks would lead to decreased contributions to dependent fisheries.	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, and Master Response 7, Aquatic Resources, regarding the choice of models used for evaluation of effects.

Ltr#	Cmt#	Comment	Response
		Additionally, the information provided in Appendix O on the impacts to Sacramento fall-run Chinook Salmon (the dominant contributor to coastal salmon fisheries) are: Page O-227: Therefore, changes in Sacramento River flows and water temperatures resulting from Alternative 1 would have a less-than-significant effect on Fall-Run Chinook Salmon spawning and incubation in the Sacramento River relative to the No Action Alternative. Page O-229: Therefore, changes in Sacramento River flows and water temperatures resulting from Alternative 1 would have a less-than-significant effect on rearing and emigrating juvenile Fall-Run Chinook Salmon in the Sacramento River relative to the No Action Alternative. Page O-230: Therefore, changes in Sacramento River flows and water temperatures associated with Alternative 1 would have a less-than-significant effect on migrating and holding adult Fall-Run Chinook Salmon in the Sacramento River relative to the No Action Alternative. The statement the "population of salmon along the SONCC would be higher under all action alternatives compared to the No Action Alternative" when discussing Alternative 1 is not supported by the information presented in Appendix O.	
39	176	[ATT1:] Appendix Q [Page:] Q-30 [EIS Text:] Q.2.3.1.3 Potential fisheries-related changes to the regional economy. Appendix O, Aquatic Resources Technical Appendix also describes that the population of salmon along the SONCC would be higher under all action alternatives compared to No Action Alternative. [Comment:] This is not the case for Trinity produced fall-run Chinook Salmon and Klamath-Trinity fall-run Chinook Salmon contribute significantly to the recreational and commercial fisheries off of northern California and southern Oregon. Impacts on Trinity fall-run Chinook salmon would impact these fisheries. Decreases in habitat and increases in water temperatures during critical periods would lead to decreased salmon production which would decrease the number of fish available for harvest in these fisheries. Additionally, the inriver recreational fishery was not evaluated and is a significantly contributes to the regions economics. In addition to properly evaluating the fishery resource (fish population) impacts, the impacts to all dependent fisheries need to be included in the document.	Please see response to comment 39-51.

Ltr#	Cmt#	Comment	Response
39	177	[ATT1:] Appendix Q [Page:] Q-30 [EIS Text:] Q.2.3.1.3 Potential fisheries-related changes to the regional economy. Appendix O, Aquatic Resources Technical Appendix also describes that the population of salmon along the SONCC would be higher under all action alternatives compared to No Action Alternative. [Comment:] This statement is contradictory to the statement on page O-44 describing the impacts of Alternative 2 on the ocean fisheries which are categorized as "Under Alternative 2, population of salmon along the SONCC would be lower compared to the No Action Alternative."	As noted in Appendices O and Q, the salmon population is expected to decrease under Alternative 2 in comparison to the No Action. Consequently, this decrease in salmon population would be detrimental to regional economy.
39	178	[ATT1:] Appendix Q [Page:] Q-70 [EIS Text:] Q.2.6.1.3 Potential fisheries-related changes to the regional economy. Alternative 4. Appendix O, Aquatic Resources Technical Appendix also describes that the population of salmon along the SONCC would be higher under all action alternatives compared to No Action Alternative. Increase in salmon population could potentially increase commercial and recreational ocean salmon harvest. Increase in commercial ocean salmon harvest would increase revenues received by fisherman [Comment:] This statement is not supported by information presented in Appendix O. The information provided in Appendix O on the impacts to Sacramento fall-run Chinook Salmon (the dominant contributor to coastal salmon fisheries) are: O-663. Therefore, changes in flows under Alternative 4 would have both positive and negative effects on the availability of spawning habitat relative to the No Action Alternative. O-663. While these results indicate that Alternative 4 would potentially reduce the availability of suitable rearing habitat for Fall-Run Chinook Salmon relative to the No Action Alternative, uncertainty exists in the importance of this reduction relative to other factors that affect the quantity and quality of rearing habitat for juvenile Chinook Salmon in the Sacramento River. O-664. Therefore, changes in water temperatures under Alternative 4 in September would have a potentially adverse effect on immigrating adult Fall-Run Chinook Salmon in the Sacramento River relative to the No Action Alternative. Lower flows in September would also result in higher water	As noted in Appendices O and Q, the salmon population along the SONCC would increase under Alternatives 1 and 4 in comparison to the No Action Alternative. This would result in beneficial impacts to the regional economy. Under Alternatives 2 and 3, the salmon population along the SONCC would decrease, adversely affecting the regional economy.

Ltr#	Cmt#	Comment	Response
		temperatures in the upper Sacramento River, potentially affecting holding adults. These statements do not support the contention that the SONCC chinook salmon populations would be higher under this alternative. These inconsistencies indicate that a thorough review and remodeling and assessment of the impacts to fisheries is necessary.	
39	179	[ATT1:] Appendix Q [Page:] Q-75 [EIS Text:] Table Q.2-66. Impact Summary. Potential fisheries-related changes to the regional economy (Project-Level). No Action Alternative. No impacts [Comment:] The "No Impacts" determination for the No Action Alternative is not supported by the information presented because the impact on Trinity River fisheries is not properly assessed for the No Action Alternative. Decreases in rearing habitat, violations of adult temperature objectives would have a negative effect on populations and the absence of an evaluation of impacts on outmigrant salmonid temperature objectives make it impossible to make a proper evaluation. See comments on Trinity River habitat and temperature evaluations. Many of the impact assessments presented for Central Valley fall-run Chinook Salmon state that there may be increased impacts due to climate change and these statements do no support that there is no impact to these fishery resources under the No Action alternative.	Please see response to comment 39-51.
39	180	[ATT1:] Appendix Q [Page:] Q-75 [EIS Text:] Table Q.2-66. Impact Summary. Potential fisheries-related changes to the regional economy (Project-Level). Alternative 4. Increased fisheries under Alternative 1 would be beneficial to the regional economy [Comment:] The statement that regional fishery dependent economy would benefit from this alternative is not supported by the information presented in the text that do not indicate that the alternative would explicitly lead to an increase in salmon populations that support these coastal fisheries.	Please see response to comment 39-178.
39	181	[ATT1:] Appendix Q [Page:] Q-75	Please see response to comment 39-178.

Ltr#	Cmt#	Comment	Response
		[EIS Text:] Table Q.2-66. Impact Summary. Potential fisheries-related changes to the regional economy (Project-Level). Alternative 4. Increased fisheries under Alternative 1 would be beneficial to the regional economy [Comment:] The statement that regional fishery dependent economy would benefit from this alternative is not supported by the information presented in the text that do not indicate that the alternative would explicitly lead to an increase in salmon populations that support these coastal fisheries.	
39	182	[ATT1:] Appendix Q [Page:] Q-75 [EIS Text:] Potential fisheries-related changes to the regional economy (Project-Level) [Comment:] An assessment of the impacts to the inriver and reservoir fisheries in the Trinity need to be assessed and included in this table.	Please see response to comment 39-51.
39	183	[ATT1:] Appendix Q [Page:] Q-77 [EIS Text:] Q.2.9 Cumulative Effects. Potential fisheries-related changes to the regional economy. "Alternatives 1 and 4 would increase the population of salmon along the southern Oregon and northern California coast, potentially increasing commercial and recreational ocean salmon harvest and revenues received by fishermen" and "Alternatives 1 and 4 would contribute to cumulatively beneficial impacts to the regional economy due to an overall increase in salmon populations which would increase commercial and recreational ocean salmon harvest and associated revenues for fishermen and ocean fisheries-supported industries." [Comment:] The statement that alternatives 1 and 4 would increase salmon populations is not supported by the information presented in Appendix O and previously in this appendix (see previous comments). Unsupported statement that alternatives 1 and 4 would increase fish populations while alternatives 2 and 3 would not are contrary to this statement. See previous comments of habitat/temperature impacts and impacts on fishery resources.	Please see response to comment 39-52.
39	184	[ATT1:] Appendix Y [Page:] Y-1 [EIS Text:] Appendix Y Cumulative Methodology	Please refer to response to comment 39-11 regarding cumulative water quality effects in the Trinity basin. Regarding the potential cumulative effects of climate change, climate change assumptions have been incorporated into the CALSIM II model for the no action and action alternatives that adequately captures the potential for climate change to influence water management

Ltr#	Cmt#	Comment	Response
		[Comment:] Impacts related to marijuana cultivation and climate change in the Trinity Basin are not evaluated and this needs to be part of the cumulative impacts due to the impacts this activity has on Coho Salmon habitat in tributaries and resulting populations impacts.	operations, reservoir storage and streamflow. Therefore, to the extent climate change conditions are captured in these alternatives, they are qualitatively considered in the cumulative impacts for the action alternatives contribution to cumulative impacts. Please refer to modeling technical appendix F for details on the modeling approach and assumptions. Illegal marijuana cultivation is not a reasonably foreseeable action and therefore not included in the analysis of cumulative impacts.
39	185	[ATTACHMENT 2: Letter from Pacific Coast Federation of Fishermen's Associations] September 6, 2017 Trinity River Alternative for the Reinitiation of Consultation on the CVP non-jeopardy Biological Opinion	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
39	186	[ATTACHMENT 3: May 18, 2019 Letter from Save California Salmon] Comments on the "Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project - Final Biological Assessment", January 2019	The commenter provided this attachment to outline their individual comments on the Draft EIS. Those comments are addressed in these responses to comments; therefore, no additional response is required.
39	187	[ATT3:] We [Save California Salmon] have reviewed the Final Biological Assessment (BA) on the reinitiation of consultation on the long-term operation of the Central Valley Project and State Water Project (CVP/SWP) and find that the impacts on Southern Oregon/Northern California Coast (SONCC) Coho Salmon in the Trinity River are not sufficiently evaluated and/or disclosed to support the conclusions drawn in the BA. While it is our understanding that the Trinity component of this BA has recently been removed from consideration of this consultation, we have not seen any official documentation of this action and many of the comments are still pertinent to ESA coverage of flow management under the Trinity River Restoration Program. In no way does this letter endorse or approve of other aspects of the BA as it relates to the Central Valley and resources outside of the Trinity and Klamath river basins. We have concerns with those other aspects of the BA that we will address separately.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary. Please see Master Response 2, Related Regulatory Processes regarding compliance with ESA.

Ltr#	Cmt#	Comment	Response
39	188	[ATT3:] Interpretation of the Trinity ROD. The BA contains text that states the Trinity ROD "strictly limits Reclamation's transbasin diversions to 55 percent of annual inflow on a 10 year average" is incorrect. The ROD and its supporting documents identify instream flow volumes based on five water year types and a minimum carryover storage but does not identify a diversion percentage or a period that this is to be calculated over.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	189	[ATT3:] Without Action Alternative. The comparison of the proposed action (PA) to the Without Action scenario (WOA) should be removed from the document [the BA]. The WOA approach to evaluate the impacts of the PA does not depict an actual no project action because the dams are still in place and have significant impacts (water temperature, physical processes, habitat availability) on the river. Comparing the PA to the WOA portrays the PA as benefiting the fishery resources of the Trinity River and minimizing the true impacts of the Trinity River Division of the CVP. This comparative methodology skews the impact analyses by reducing the PA relative impacts, leading to minimized impacts or even supposed benefits to listed species. At least this should be acknowledged in the document. A rather exhaustive list of potential impacts of summer/fall low flow conditions is provided but these conditions may be eliminated, or at least minimized, if the higher flows in the winter would restore natural riverine features such as deep holes, which would stratify under low flow conditions and provide thermal refugia to holding adults and rearing juveniles.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	190	[ATT3:] Trinity River Water Temperature Modeling. No information is presented in the BA or supporting appendixes concerning the effects of CVP/SWP water operations on meeting Trinity River water temperature objectives for adult and juvenile salmonids. The only information presented is mean monthly water temperatures below Lewiston Dam which is not the location where attainment of water temperature objectives should be evaluated. Additionally, mean monthly temperatures are not a useful metric for evaluating temperature impacts because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes. The California Regional Water Quality Control Board – North Coast Region established the following water temperature objectives for adult salmonids in the upper Trinity River, which were also incorporated into the Trinity ROD: [Exhibit 1] The water temperature objective for outmigrating juvenile Coho Salmon in the Trinity River was established under the Preferred Alternative of the Trinity	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		River Mainstem Fishery Restoration EIS/EIR which was adopted by the Trinity ROD (USDOI 2000): [Exhibit 2] The USGS Trinity River water temperature model (Jones et al 2016) should be used to evaluate the PA using the above adult and juvenile temperature metrics [Exhibits 1 & 2]. This water temperature model accurately simulates daily mean water temperature along the Trinity River, from Lewiston Dam to the Klamath River confluence. Additionally, output from this model can be used to simulate water temperatures in the lower Klamath River.	
39	191	[ATT3:] [Exhibit 1: Table showing H2O temp objectives for salmonids on Trinity River]	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	192	[ATT3:] [Exhibit 2: Table showing H2O temp objectives for juvenile Coho Salmon on Trinity River]	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	193	[ATT3:] Coho Salmon. The assertions that the PA, including the restoration actions implemented by the TRRP, “will continue to result in increases in Coho Salmon populations” and “would have overall long term beneficial effects on the Coho Salmon designated critical habitat” are flawed and not supported by the most recent data on natural origin adult Trinity River Coho Salmon returning to the Trinity River. Returns of natural origin Coho Salmon have reached record low levels. A detailed assessment on the status of the Trinity Coho Salmon population affected by TRD/CVP water operations must be incorporated as part of the BA.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	194	[ATT3:] Carryover Storage – Drought Scenario The low end of month storage in August through October during Critical Dry Years indicates there could be severe violation of NCWQCB [North Coast Water Quality Control Board] water temperature objectives which would lead to impacts on holding and early spawning Coho Salmon. This impact could be exacerbated by a multi-year drought where the exhaustion of the cold water pool could limit the ability to meet the juvenile and adult temperature standards in the Trinity River. The impacts of a low carry-over storage during a dry hydrologic period should be modeled as part of the cumulative effects to ensure that operations and carry-over storage levels are appropriate.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	195	[ATT3:] Accounting for Humboldt County’s 50,000 acre-feet water contract and the Lower Klamath Record of Decision. It does not appear that Humboldt County’s 50,000 acrefeet water contract and the Lower Klamath ROD were	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		included in the modeling of water availability. The second Proviso in Section 2 the Trinity River Division Act (Public Law 84- 386), which authorized the construction and operation of the Trinity River Division of the Central Valley Project, directs that not less than 50,000 acre-feet of water shall be released into the Trinity River and made available to Humboldt County and other downstream users. This volume of water needs to be accounted for in all modeling exercises [including cumulative impacts].	
39	196	[ATT3:] Marijuana Cultivation. The impact of marijuana cultivation on water quantity and quality in tributary streams, critical habitats for Coho Salmon, should at least be listed with the other cumulative effects factors, if not evaluated as a component of the cumulative impacts affecting the Trinity River Coho Salmon population	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	197	[ATT3:] Eulachon. Impacts on the Eulachon southern DPS (threatened) needs to be thoroughly evaluated in this BA pertaining to the TRD operations since it was not covered under the Biological Opinion for the Trinity ROD. The conclusion that the “proposed action may affect, but is not likely to adversely affect Eulachon critical habitat” is not supported by the information that in some years the decrease in lower Klamath flows attributed to the proposed action can be as high as 23%, which would likely adversely affect Eulachon spawning habitat. Additionally, these larger decreases are mostly likely during dryer water years so there may also be temperature impacts.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	198	Green Sturgeon. Impacts; on the and Green Sturgeon northern DPS (species of special concern) needs to be thoroughly evaluated in this BA pertaining to the TRD operations since they were not covered under the Biological Opinion for the Trinity ROD. Changes in hydrology and water temperature in the lower Trinity and lower Klamath river may impact this population.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	199	Killer Whale. The impact analysis for the southern resident Killer Whale DPS only evaluates impacts on Central Valley salmon stocks. In the Analytical Approach – Aquatic Species (Section 5.1) Klamath-Trinity Chinook are listed, presumably to support the Killer Whale analysis, but no analyses presented for these stocks of Chinook Salmon. Since Klamath-Trinity Chinook Salmon stocks intermingle with Central Valley stocks and contribute to the food base for Killer Whales, they need to be included in this analysis.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	200	[ATT3: Page:] 1-7 [Section:] 1.2 Action Area [Comment:] Lewiston Reservoir should be included as part of the Action Area.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
39	201	[ATT3: Page:] 2-7 [Section:] 2.1.5 Water Operations Management [Comment:] The text pertaining to diversions from the Trinity Basin to the Sacramento Basin (The 2000 Trinity River Record of Decision (Trinity ROD) strictly limits Reclamation's transbasin diversions to 55 percent of annual inflow on a 10 year average basis for the restoration and protection of the Trinity fishery," is incorrect. The Trinity River Mainstem Fishery Restoration ROD provides for annual volumes to be released into the Trinity River from Lewiston Reservoir based on 5 water-year types and a minimum carryover storage volume of 600,000 AF. There is no provision of limiting transbasin diversions to 55% on a 10 year average in the ROD. See the Trinity River ROD for specific water year type volumes and carryover storage levels.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	202	[ATT3: Page:] 2-7 [Section:] 2.1.5 Water Operations Management [Comment:] The statement that Reclamation released fall augmentation flows "For the previous 15 years" is not correct. From 2003 to 2018, fall augmentation flows have been released eight times. See BOR Trinity River Restoration website years and volumes of fall flow augmentation. http://www.trrp.net/restoration/flows/summary/	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	203	[ATT3: Page:] 2-57 [Section:] 2.1.5 Water Operations Management [Comment:] While the BA states that "Reclamation does not currently manage for Green Sturgeon. However, many operational changes made for Chinook Salmon or Steelhead also benefit Green Sturgeon." pertaining to the southern Green Sturgeon DPS, there is no acknowledgement of the potential impacts on the green sturgeon population in the Klamath-Trinity Basin which is part of the northern DPS. The potential impacts of diversions from the Trinity River to the Sacramento River should be evaluated as green sturgeon were not evaluated in the Trinity ROD ESA consultation.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	204	[ATT3: Page:] 2-84 [Section:] 2.16.3 Historical and Current Distribution and Abundance [Comment:] The statement "Adult return numbers to the TRH provide rough estimates of the hatchery-origin coho salmon return numbers" is incorrect as sometimes large numbers of hatchery origin Coho Salmon spawn in the mainstem Trinity River below Lewiston Dam and, probably to a lesser extent,	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		in upper Trinity River tributaries. If only the number Coho Salmon returning to the hatchery are used, the Wild (or natural) contribution to the Coho Salmon run will be significantly overestimated. For example, in 2017, 270 adult Coho Salmon of the inriver run returned to TRH (66%), but the hatchery contribution to the total run was 86% because of significant spawning of hatchery fish in the river (CDFW 2017). CDFW has these data going back to at least the early 1980s. http://www.trrp.net/DataPort/doc.php?id=2409	
39	205	[ATT3: Page:] 2-86 [Section:] 2.16.5 Water Operations [Comment:] The statement “Reclamation makes releases from Lewiston Dam in accordance with the Trinity ROD, which considers requirements for Coho in the Trinity River” may have been sufficient at the time that the Trinity ROD was signed (December 2000) but the impacts of flows on Coho Salmon should be re-evaluated given the extensive river restoration work that has been implemented and the monitoring and evaluation efforts that provide updated information on habitat needs and availability.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	206	[ATT3: Page:] 2-86 [Section:] 2.16.5 Water Operations [Comment:] The statement “Increases in Trinity River releases in the late summer and fall result in lower storage in Trinity Reservoir at the end of the water year. The decreases in storage accumulate from water year to water year when the reservoir does not refill resulting in lower end-of summer storages, negative impacts on cold water pool, and warmer stream temperatures for Coho and Fall-Run Chinook Salmon spawning in the Trinity River” erroneously places the blame of decreased storage in Trinity Reservoir on releases into the Trinity River. While releases to the Trinity Rivermust come from Trinity Reservoir, it is the trans-basin diversions that create decreases in storage. Additionally, the statement that increases in late-summer and fall result in lower storage is ignoring the fact that the fall flows to improve conditions in the lower Klamath River are covered by the Lower Klamath Record of Decision and should be accounted for in BOR operations. https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28314	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	207	[ATT3: Page:] 2-89 [Section:] 2.18.5 Water Operations Management	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		[Comment:] While the flow increases associated with the Trinity ROD may benefit Eulachon, the levels of water diverted to the Sacramento may adversely affect Eulachon in the Klamath River and this should be evaluated. The potential impacts of diversions from the Trinity River to the Sacramento River should be evaluated as Eulachon were not evaluated in the Trinity ROD ESA consultation.	
39	208	[ATT3: Page:] 3-17 [Section:] 3.3.1 Trinity [Comment:] Some actions of the TRRP would still need to be implemented, for example gravel augmentation, since the continued existence of the dams blocks gravel recruitment below the dams.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	209	[ATT3: Page:] 3-21 [Section:] 3.3.8 Non-Operational Actions [Comment:] Need to include Trinity River Hatchery as an ongoing activity.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	210	[ATT3: Page:] 4-5 [Section:] 4.1 Decreasing Operational Discretion [Comment:] The upper range of flow volumes released into the Trinity River is for an Extremely Wet water year and not a Wet water year. Also, minimum carry-over storage levels should be included.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	211	[ATT3: Page:] 4-5 [Section:] 4.1 Decreasing Operational Discretion [Comment:] Releases into the Trinity to meet the requirements and obligations identified in the Long-term Plan to Protect Adult Salmon in the lower Klamath River ROD need to be included. https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28314	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	212	[ATT3: Page:] 4-7 [Section:] 4.2 Operational Tradeoffs [Comment:] The statement "Increases in Trinity River releases in the late summer and fall result in lower storage in Trinity Reservoir at the end of the water year. The decreases in storage accumulate from water year to water year when the reservoir does not refill resulting in lower end-of summer storages, negative impacts on cold water pool, and warmer stream temperatures for Coho and Fall-Run Chinook Salmon spawning in the Trinity River" erroneously places the blame of decreased storage in Trinity Reservoir on releases into the	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		Trinity River. While releases to the Trinity River must come from Trinity Reservoir, it is the trans-basin diversions that create decreases in storage. The volumes of water needed to meet Trinity flow volumes, lower Klamath River fall flow needs, and Trinity carryover storage need to be accounted for before excessive diversions are implemented.	
39	213	[ATT3: Page:] 4-21 [Section:] Table 4-6. Components of the Proposed Action [Comment:] The Cold Water Management Tools are included as part of this consultation, but the Trinity and lower Klamath RODs are not; which is inconsistent with the operation of the Trinity River Division linkage with the CVP. Since these facilities are operated to meet water and power demands and water temperature/water quality needs in both the Trinity, lower Klamath, and Sacramento rivers the TRD operations need to be included in this consultation.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	214	[ATT3: Page:] 4-22 [Section:] Table 4-6. Components of the Proposed Action [Comment:] The Trinity River Mainstem Fishery Restoration ROD and the Long-term Plan to Protect Adult Salmon in the Lower Klamath River ROD need to be included in this consultation because the operations of the Trinity River Division, specifically diversions to the Sacramento River and carryover storage in Trinity Reservoir have direct effect on meeting the objectives of these two records of decisions to protect the fishery resources of the Trinity River.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	215	[ATT3: Page:] 4-24 [Section:] 4.9.1 Upper Sacramento River (Shasta and Sacramento Divisions) [Comment:] Whiskeytown Reservoir, Trinity River Reservoir, Lewiston Reservoir, and the power plants associated with these reservoirs need to be included in the Upper Sacramento River facilities because of the diversions that occur from the Trinity to the Sacramento. On page 4-26, Section 4.9.1.1 Seasonal Operations 4.9.1.1 Seasonal Operations contains the following text that demonstrates the linkage between the Trinity and Sacramento systems and why the Trinity needs to be incorporated into this BA: “During the summer, operational considerations are mainly flows required for Delta outflows, instream demands, and temperature control. In river temperatures below Shasta Dam can be controlled via two methods. First is changing release volume or shifting releases between Trinity and Sacramento reservoirs,”	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
39	216	[ATT3: Page:] 4-32 [Section:] 4.9.1.3.1 Summer Cold Water Pool Management [Comment:] Proposed temperature profile data measurements shown in Table 4-8 indicate the integration of Trinity and Whiskeytown reservoirs in summer temperature management and these two facilities need to be included in the BA for the CVP.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	217	[ATT3: Page:] 4-36 [Section:] 4.9.2.1 Seasonal Operations [Comment:] The statement “The 2000 Trinity ROD strictly limits Reclamation’s transbasin diversions to 55 percent of annual inflow on a 10-year average basis to legal and trust mandates for the restoration and protection of the Trinity fishery” is incorrect. The only information in the Trinity River ROD that alludes percentage of water yield diverted can be found on page 19 ““TRD integration with CVP: The Preferred Alternative provides for the continued operation of the Trinity River Division of the CVP, including the continued export to the Central Valley of a majority of the waters flowing into the TRD (averaging 52%)”. This value is simply the difference in the weighted mean of the volumes proposed to be released into the Trinity River compared to the long-term yield at the time of the signing of the ROD. It is not sharing percentage over a 10year period as identified in the BA.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	218	[ATT3: Page:] 4-36 [Section:] 4.9.2.1 Seasonal Operations [Comment:] The statement “Reducing transbasin diversions was intended to improve the cold water pool in Trinity Reservoir to improve conditions for fall spawning down the Trinity River.” is incorrect. The reduction in transbasin diversions was needed to meet all flow dependent aspects of the Trinity River Restoration Program as well as minimum carryover storage levels.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	219	[ATT3: Page:] 4-37 [Section:] As a result, Trinity River Export operations are completely integrated with Shasta Dam operations. [Comment:] Following text from the BA shows the need to include TRD operations in this consultation “As a result, Trinity River export operations are completely integrated with Shasta Dam operations.”	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
39	220	[ATT3: Page:] 4-62 [Section:] 4.10 Items Not Included in This Consultation [Comment:] In the section “Items Not Included in This Consultation” includes TRRP flows but TRRP flows along with flows to meet the Long-term Plan to Protect Adult Salmon in the Lower Klamath River ROD need to be included in this consultation because of the linkage between Trinity operations and the rest of the CVP; as noted above.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	221	[ATT3: Page:] 5-2 [Section:] 5.1 Analytical Approach –Aquatic Species [Comment:] Klamath-Trinity Green Sturgeon (Northern DPS) and Eulachon (southern DPS) should be included in the effects analysis in more detail due to their status as a species of special concern and threatened, respectively. No information is presented in the effects analysis pertaining to Trinity and Klamath Chinook Salmon Stocks, but they are listed in this section.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	222	[ATT3: Page:] 5-3 [Section:] 5.5 Without Action Scenario [Comment:] What would be the operation protocols for the Trinity River Division under the Without Action Scenario? Due to infrastructure constraints (maximum flow releases) at both Trinity and Lewiston dams there could be significant challenges in managing these structures without impacting the fishery resources of the river. This could range from releasing very high flows during the late fall and winter to protect the integrity of the dams which could lead to significant scour of redds to low flows during the summer, which would create temperature violations due to heating in Lewiston Reservoir.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	223	[ATT3: Page:] 5-300 [Section:] 5.14.5 Chinook Salmon, Central Valley Fall-run/Late Fall-run ESU [Comment:] Klamath-Trinity spring and fall Chinook Salmon should be included as part of the Southern Resident Killer Whale DPS evaluation. In the Analytical Approach – Aquatic Species (Section 5.1) Klamath-Trinity Chinook are listed, presumable to support the Killer Whale analysis, but no analyses are presented.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	224	[ATT3: Page:] 5-445 [Section:] 5.18. Coho Salmon, Southern Oregon/Northern California Coastal ESU	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		[Comment:] The statement “The proposed action provides beneficial effects to Coho Salmon due to higher flows and lower temperatures in the summer and fall, as compared to WOA” is based on flawed logic that the dams would have no or insignificant impacts on Coho Salmon populations or habitat. The existence of Trinity and Lewiston dams, in addition to blocking 109 miles of spawning and rearing habitat and gravel transport and large wood transport, create conditions where during low flow summer/fall the water temperature will increase to detrimental levels. Indicating that the proposed action will be better for the fish ignores the fact that the existence and operation of the dam/diversions have contributed to their listing under ESA and a more legitimate evaluation would be to compare the proposed action to a state where the dams were not there.	
39	225	[ATT3: Page:] 5-447 [Section:] 5.18.3.1 Seasonal Operations [Comment:] Coho Salmon spawning in the Trinity River typically occurs from November through January (Trinity River Flow Evaluation - USFWS &HVT 1999) and not February to April as noted in the document. The assertion that the proposed action would be better for eggs and alevin survival “ due to reduced fine sediment in the channel substrate, and an increased food base for these fish due to increased macroinvertebrate production” is not supported with any information and it is more likely that the larger winter/spring flows would provide for better riverine conditions for all aquatic organisms.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	226	[ATT3: Page:] 5-451 [Section:] 5.19.1 Seasonal Operations [Comment:] The description of the WOA operations, “uncontrolled flows would be released to the Trinity River,” is likely inconsistent with the 1955 Act that authorized the Trinity River Division because of the requirement to maintain fish and wildlife populations of the river. Gravel augmentation would need to occur because of the existence of Trinity and Lewiston dams to comply with the 1955 Act. See the Max Flow alternative of the Trinity River Mainstem Fishery Restoration EIR/EIR. This alternative was the most beneficial for the fishery resources of the Trinity River. For the Trinity, a more appropriate comparison would be the MAX Flow alternative to the proposed action which would show that the proposed action would not “improve habitat by continuing implementation of a normal (reduced) hydrograph”.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		Additionally, the hydrographs recommended in the Trinity ROD are not “normal (reduced) hydrographs”, the hydrographs were developed to meet specific objectives and it was the intent of the ROD that these hydrographs and objective would be evaluated through the TRRP adaptive management program. This is of importance with the winter/spring rearing flows since the intent of the major channel rehabilitation program was to eliminate (or at least reduce) the fry/juvenile rearing habitat bottleneck that existed due to the degraded (ditch shaped) river channel. Since the Trinity River Flow Study (1999) and the Trinity ROD (2000) a substantial body of literature has been developed on the importance of mimicking natural flow regimes to aquatic ecosystems. This should be one of the evaluation criteria used to evaluate the potential benefits or impacts on fishery resources in the BA.	
39	227	[ATT3: Page:] 6-1 [Section:] Chapter 6 Cumulative Effects [Comment:] There are many issues not included in the cumulative effects section of the BA so it is assumed that they were not evaluated or at least not acknowledged as factors impacting Trinity River Coho Salmon. These are: (1) the impact of the 600 TAF minimum carryover storage in meeting Trinity River water temperature objectives during multi-year droughts, (2) accounting for Humboldt County’s 50 TAF water contract for Trinity River/TRD water and its impact on water availability, and (3) the impact of the marijuana industry on Coho Salmon, especially in tributary streams.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	228	[ATT3: Page:] 7-9 [Section:] 7.2.10 Coho Salmon, Southern Oregon/Northern California Coastal ESU [Comment:] The statement that the “the inter-basin transfer of water to the Sacramento River likely will continue to affect Coho Salmon, primarily the upper and lower Trinity River populations, through changes in habitat that affect their ability to spawn and rear in the mainstem of the Trinity River” ignores the potential water temperature impacts that would affect Coho Salmon growth and survival. The “overall effects of the proposed action” may not be “beneficial” because the likely habitat bottle-neck of current rearing flows that have not been reevaluated and adjusted, as needed, following the substantial channel rehabilitation activities.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
39	229	[ATT3: Section:] 7.2.11 Coho Salmon, Southern Oregon/Northern California Coastal ESU Critical Habitat [Comment:] The following statement "Under the proposed action, the TRRP is expected to continue to result in increases in Coho Salmon populations, through improving fish habitat conditions, such as Coho Salmon critical habitat and associated biological features" is not supported by the most recent data on adult Trinity River Coho population which indicates that they are declining to record low numbers. See CDFW report Kier et al 2018. Therefore, the conclusion that the "the proposed action would have overall long term beneficial effects on the Coho Salmon designated critical habitat" is flawed because after 15+years of increased flows and habitat restoration implemented by the TRRP, the Trinity River Coho salmon population is at record low levels.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	230	[ATT3: Page:] 7-15 [Section:] 7.2.17 Eulachon, Southern DPS [Comment:] Information concerning Eulachon affects is inconsistent. It is stated "under the proposed action, Lewiston flows would contribute less to flow entering the lower Klamath River during December" but then the following statement is made "Flows and water temperature differences under the proposed action are insignificant and, therefore, are not likely to adversely affect Eulachon spawning temperatures in the lower Klamath River. On page 5-457, the flow changes in the Lower Klamath River attributed to the proposed action range from "0% to nearly 23%" with the average of <10%. The conclusion that the "proposed action may affect, but is not likely to adversely affect Eulachon critical habitat" does not seem to be supported by the information that in some years the decrease in lower Klamath flows attributed to the proposed action can be a high as 23%, which would likely adversely affect Eulachon spawning habitat. Additionally, these larger decreases are mostly likely during dryer water years so there could also be a temperature impact.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	231	[ATT3: Page:] 7-15 [Section:] 7.2.19 Southern Resident Killer Whale [Comment:] There is no discussion of Klamath-Trinity spring and fall Chinook Salmon in the section pertaining to Southern Resident Killer Whales. Klamath-	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		Trinity Chinook salmon stocks migrate along the coast of Oregon and California contribute as a food source for the Southern Resident Killer Whales.	
39	232	[ATT3: Appendix D. Page:] 3 [Section:] Current Operations [Comment:] In addition to the Trinity ROD, volumes identified in the ROD for the Long-term Plan to Protect Adult Salmon in the Lower Klamath River needs to be incorporated into the analysis of the proposed action.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	233	[ATT3: Appendix D. Page:] [Section:] [Comment:] For assessing temperature impacts on the Trinity River and lower Klamath River, the USGS water temperature model that accurately simulates daily mean water temperature along the course of the Trinity River, from Lewiston Dam to the Klamath River confluence, should be used to evaluate how changes in TRD water operations would affect Trinity and lower Klamath water temperatures and how these would impact fishery resources. Additionally, there is a Klamath River model that can use the Trinity water temperature model outputs to predict water temperatures in the lower Klamath River. The Reclamation Temperature Model is a monthly model which is not appropriate for modeling impacts on water temperature. Water temperature analyses should be based on daily time steps because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes. Jones, E.C., Perry, R.W., Risley, J.C., Som, N.A. and Hetrick, N.J., 2016, Construction, calibration and validation of the RBM10 water Temperature model for the Trinity River, Northern California. U.S. Department of Interior, U.S. Geological Survey, Open-File Report 2016-1056, prepared in cooperation with the U.S. Fish and Wildlife Service and the Bureau of Reclamation, 56p.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	234	[ATT3: Appendix D. Page:] 10 [Section:] Facilities [Comment:] Lewiston Dam needs to be included in the list of facilities. How will it be operated, especially given the human encroachment that has occurred along the upper Trinity River. Lewiston Reservoir can create tremendous water temperature problems when flow through the reservoir is relatively low (<1500-2800 cfs depending on meteorological and hydrologic conditions) but	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		this impact should not be depicted as a benefit the proposed action is addressing since if the dam wasn't there it would not be an issue.	
39	235	[ATT3: Appendix D. Page:] 14 [Section:] Trinity River Restoration Program [Comment:] While the Trinity River Division (TRD) of the CVP would only be operated as a flood control structure, at least the gravel augmentation component of the Trinity River Restoration Program to comply with the 1955 Act authorizing the construction and operation of the TRD in protecting the fish and wildlife of the Trinity River.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	236	[ATT3: Appendix D. Page:] 17 [Section:] REGULATORY STANDARDS North Coast Region [Comment:] The North Coast Regional Water Quality Control Board water temperature objectives for the Trinity River should be included in this table. The objectives are: Daily Average Not to Exceed Period River Reach 60°F July 1- Sept 15 Lewiston to Douglas City Bridge 56°F Sept 15-Oct 1 Lewiston to Douglas City Bridge 56°F Oct 1- Dec 31 Lewiston to North Fork Confluence Water Quality Control Plan for the North Coast Region" Footnote 5, Table 3-1, page 3-8.00: Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105bp/04_water_quality_objectives.pdf	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	237	[ATT3: Appendix D. Page:] 17 [Section:] REGULATORY STANDARDS [Comment:] The Trinity ROD (see Trinity River Flow Evaluation for specifics) has temperature standards for outmigrating juvenile salmonids, including Coho Salmon (TRFE – USFWS and HVT 1999). The effects of the proposed action in meeting temperature objectives for outmigrating needs to be evaluated using the appropriate model (Jones et al 2016).	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
		file:///C:/Users/JPOLOS2018/Documents/joe/Consulting/CVP%20BA/Trinity %20EISEIR/USFWS%20HVT%201999%20(June%20FINAL%20%20locked) %20Trinity%20River%20Flow%20Evaluation%20Final%20Report.pdf	
39	238	[ATT3: Appendix D. Page:] 30 [Section:] Table 1-3. Trinity Lake Storage, End of Month Storage [Comment:] The low end of month storage during Critical Dry Years indicates that there would likely be severe violation of WQCB water temperature standards. The impact of this on Trinity River water temperatures needs to be thoroughly evaluated, especially when occurrences of low carry-over storage occur during a dry hydrologic period.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	239	[ATT3: Appendix D. Page:] 180 [Section:] Table 12-2. Trinity River Flow below Lewiston, Monthly Flow [Comment:] The mean monthly flows for the proposed action Wet and Above Norman water year types do not match the Trinity ROD flows so this should be explained. Additionally, since these are mean monthly flows there is the potential for flow induced scour and fry displacement/mortality if the releases are highly variable. Daily information should be provided and the potential for red scour and fry displacement/mortality be evaluated.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.
39	240	[ATT3: Appendix D. Page:] 929 [Section:] Table 1-2. Trinity River Below Lewiston Dam, Monthly Temperature [Comment:] Model output of mean monthly water temperature below Lewiston Dam indicate that there will be severe water temperature issues under the PA in meeting WQCB adult water temperature standards during Below Normal (July-Oct), Dry (June-Nov), and Critically Dry (June-Nov). Releases from Lewiston typically must be less than 50F to meet the downstream objectives, although this depends on the hydrology and meteorology of an individual year. The modeling that is needed for this evaluation should estimate the temperature at the control points established for the WQCB standards.	This comment pertains to the Biological Assessment for ROC on LTO. This comment is not within the scope of the EIS, therefore, no further response is necessary.

Ltr#	Cmt#	Comment	Response
40	1	RECLAMATION’S TECHNICAL APPENDICES RELY ON STALE DATA, AND INCORPORATE AND ASSUME IMPLEMENTATION OF CALIFORNIA WATERFIX	At the time the Notice of Intent was issues for ROC on LTO, California WaterFix had been approved by the State of California and was a reasonably foreseeable project which was appropriate to include in the cumulative effects

Ltr#	Cmt#	Comment	Response
		DEIS Appendix O, the Aquatic Resources Technical Appendix, states that “Several ecosystem improvement projects and actions including the Central Valley Project Improvement Act, the CALFED Bay-Delta Program, California EcoRestore, California WaterFix, the CDFW Ecosystem Restoration Program, and various other conservation management, and restoration programs . . . have been initiated to offset the adverse effects of previous and ongoing activities.” DEIS, Appendix O, O-841. Likewise, the Power and Energy Technical Appendix, Appendix U, states that the “Bay Delta Conservation Plan [“BDCP”] (including the California WaterFix alternative)” is a cumulative project. DEIS Appendix U-32. DEIS Appendix D-1, Components for Reinitiation of Consultation on Long-Term Operation, refers to the California Department of Fish and Wildlife’s (“CDFW’s”) required mitigations for the California WaterFix. DEIS Appendix D1, D1-146, D1-147. Appendix D1 includes restoration activities identified in the “California WaterFix Proposed Action” as part of the preferred Alternative. DEIS Appendix D1, D1-77; see also D1-145. Likewise, Reclamation’s modeling assumptions incorporate the WaterFix FEIR/FEIS, Appendix 5A Section A.5.3., by reference. DEIS Appendix F, Attachment 2-1, pp. 34, 42; Attachment 2-7, p. 4. And DEIS Appendix Y contains Reclamation’s summary of the cumulative projects that “serve as the foundational information for conducting the cumulative impact assessments for many of the resources addressed in the [DEIS].” DEIS Appendix Y, Y-1. Appendix Y includes Cache Slough Restoration as an action “being evaluated though the [BDCP] process.” DEIS Appendix Y, Y-17. Yet Reclamation never issued a Record of Decision approving the California WaterFix, and the Department of Water Resources (“DWR”) rescinded its approval – and decertified the WaterFix FEIR/FEIS – on May 2, 2019. CDFW rescinded its Incidental Take Permit for the California WaterFix on May 14, 2019. In so doing, CDFW stated that “the findings and determinations that CDFW made in reliance upon [the WaterFix FEIR/FEIS] will have no further effect going forward.” May 14, 2019 Letter from CDFW Director Bonham to DWR Director Nemeth, California WaterFix – Recession of Incidental Take Permit No. 2081-2016-055-03. And the BDCP – WaterFix’s precursor – was abandoned long ago. WaterFix is neither an ongoing nor a cumulative project, and CDFW’s findings are no longer effective. Reclamation’s reliance upon and incorporation of the analysis and components of the WaterFix FEIR/FEIS is improper.	analysis. Please see Master Response 1, Responses to General Comments, for additional information regarding the inclusion of California WaterFix in the cumulative analysis.

Ltr#	Cmt#	Comment	Response
40	2	DEIS Appendix Y lists "major conveyance projects" as a cumulative project, but does not have any description of these projects. DEIS Appendix Y, Y-6. Instead, it seems that the cell where the description should appear is continued from the cell directly above it, listing "future groundwater storage and recovery projects." Id. From this it is impossible to determine what future conveyance projects Reclamation expects to occur, and whether these actions will cumulatively create impacts that have not been discussed in the DEIS. This violates NEPA.	A formatting error has been corrected in Appendix Y Table Y-1 to renumber the list of "major conveyance projects" included in the cumulative analysis. The conveyance projects listed include the BayArea Regional Water Reliability program, Friant-Kern Canal and Madera Canal Capacity Reclamation Projects, and the Los Banos Creek Water Resources Management Plan. These projects were considered in the cumulative effects analyses if they would contribute to effects disclosed for the action alternatives.
40	3	RECLAMATION MUST STUDY A REASONABLE RANGE OF ALTERNATIVES, INCLUDING ALTERNATIVES THAT WOULD RESTORE AND ENHANCE FISH POPULATIONS As discussed in Conservation Groups' August 26, 2019 Comment Letter, Reclamation continues to ignore its statutory mandates under the Central Valley Project Improvement Act, Public Law No. 102-575, ("CVPIA"), and other laws, to appropriately account for the water needs of fish and wildlife in its operation of the Central Valley Project ("CVP"). August 26, 2019 Comment Letter, pp. 2-3, citing CVPIA §§ 3402(a), 3406(b), 3406(b)(1); Water Infrastructure Improvements for the Nation Act, Public Law 114-322 ("WIIN Act") § 4010(d)(8)(B); DEIS 1-2, DEIS 3-1 (dismissing from consideration an alternative that "considers instream flow needs determinations for all [CVP] controlled streams and rivers pursuant to CVPIA section 3406(B)(1)(B)"). Indeed, Reclamation's failure to "rigorously explore and objectively evaluate all reasonable alternatives, include reasonable alternatives not within the jurisdiction of the lead agency" violates the National Environmental Policy Act, 16 U.S.C. section 4321 et seq. ("NEPA"). August 26, 2019 Comment Letter, p. 3 (quoting Westlands Water Dist. v. U.S. Dept. of Interior, 376 F.3d 853, 868 (9th Cir. 2004) (internal quotations and citations omitted)); see also City of Carmel-By-The-Sea v. U.S. Dept. of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997); National Parks & Conservation Ass'n v. Bureau of Land Management, 606 F.3d 1058, 1072 (9th Cir. 2010).	Please see Master Response 1, Response to General Comments, and Master Response 4, Alternatives Formulation, regarding development and range of alternatives evaluated, and Master Response 5, Adequacy of Analysis and Mitigation, regarding the analysis contained in the EIS.
40	4	The DEIS states that "Alternative 4 would manage reservoir storage for the primary objective of preserving the coldwater pool. In addition to managing water temperatures, Alternative 4 would release additional instream flows in the Sacramento River and its tributaries to benefit fish but would balance this operation with the need to preserve the coldwater pool." DEIS 1-3. This is the only alternative discussed in the DEIS that even comes close to protecting fisheries resources, yet it would not help fish when cold-water flows are most	Please refer to Master Response 4, Alternatives Formulation for a discussion regarding the range of alternatives evaluated in the EIS and additional discussion regarding the inclusion of Alternative 4. Given the needs of listed fish species Alternative 4 would release additional flows in the Sacramento River and its tributaries to benefit fish but would balance these releases with cold water pool management.

Ltr#	Cmt#	Comment	Response
		necessary. Indeed, for the American River Division "in about 60% of years" – according to Reclamation's modeling – Reclamation "would release less flow" than the flow targets. DEIS 3-50. On the Feather River, "DWR would operate Lake Oroville" to "release less flow during years with low storage or forecasted inflow conditions. Model results show that this occurs in about 35% of years." Id. And model results show that releases from Shasta would be reduced below target levels "in about 10% of years." Id. During these times, Reclamation would "follow the operational objectives described in Alternative 1." DEIS 3-48. But by curtailing flows during the hottest, driest years in the manner described in Alternative 1, Alternative 4 continues to jeopardize the survival of the salmonids that depend upon cold water flows for survival. Reclamation's Alternative 4 cannot satisfy Reclamation's need to study a reasonable range of alternatives.	

Ltr#	Cmt#	Comment	Response
41	1	We appreciate the extension of the comment deadline afforded by the U.S. Bureau of Reclamation (Bureau) to Butte County. We were disappointed in your decision to grant a very short, eight-day extension. The extension did not provide a sufficient amount of time to have the comments be considered by the Butte County Board of Supervisors. The Butte County Department of Water and Resource Conservation offer the following comments and recommendations on the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project draft Environmental Impact Statement (EIS).	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments regarding the duration of the comment period.
41	2	Before addressing specific concerns with the EIS, we are extremely troubled by the action of the Bureau and the Department of Water Resources (DWR) to revise the Coordinated Operating Agreement (COA) in late 2018. Under the revised COA, the SWP became responsible for 40% of the in-delta standards in dry years. The previous COA placed the CVP with 75% of the responsibility of meeting in-delta standards and t he SWP responsible for 25%. This abrupt shift in state/federal responsibilities was done without any notice, scientific analysis or transparency. It appears that the revisions to the COA were expedited to accommodate the California WaterFix project before the California Governor's office changed administrations in January 2019. As one of his first acts in 2019, Governor Newson abandoned the California WaterFix project and called for the development of a Delta Conveyance Project. Another assumption of the revised COA was that the SWRCB's Bay Delta Water Quality Plan would adopt an	Please refer to Master Response 1, Responses to General comments for a discussion regarding the State Water Resources Control Board's process for updating the Bay-Delta Water Quality Control Plan. The Coordinated Operations Agreement (COA) adopted in 2018 is considered part of the No Action Alternative as an existing condition and as part of the action alternatives.

Ltr#	Cmt#	Comment	Response
		unimpaired flows approach. The EIS was also built upon a similar assumption. That assumption proved to be premature and inaccurate. Water right holders in the Sacramento Valley are engaged in constructive Voluntary Agreements negotiations with the SWRCB that will provide a 21st century approach to water management will better serve the Sacramento Valley and more effectively protect Delta water quality. The revised COA was not based on science, transparency or a factual programmatic foundation. Therefore, the Bureau and DWR must withdraw the revised changes to the COA until the Delta Conveyance Project is designed and the State Water Resources Control Board finalizes the Bay Delta Water Quality Plan Before finalizing future revisions to the COA, the Bureau and DWR must do so in a transparent manner.	
41	3	The EIS is founded on a weak scientific foundation, incorrect assumptions, and a failure to assess and mitigate impacts. Most troubling is that the EIS proposes to meet a 55% unimpaired flow in the delta through a reoperation of Lake Oroville. The unimpaired flow standard is similar to the recommendations from the SWRCB's 2010 Delta Flow Criteria report. The EIS states that to meet the 55% unimpaired flow standard, Lake Oroville will be drawn to "dead-pool" conditions every three years (p. 3-50). The drought-like conditions at Lake Oroville would become the norm. This situation would render Lake Oroville inoperable as a recreation venue, damage the ecosystem, devastate the local economy and become a visual blight on the region. The EIS failed to assess or mitigate the socioeconomic, recreational or other impacts to Lake Oroville.	The EIS does not state that Lake Oroville would be drawn to "dead-pool" conditions on page 3-50. Instead it states that "To balance these flow targets with water in storage, DWR would release less flow during years with low storage or forecasted inflow conditions. Model results show that this occurs in about 35% of years." As described, less flow would be released in low water years. In addition, Appendix F Modeling provides the results of the hydrologic modeling conducted for Oroville Reservoir. These results, reported as reservoir storage and elevation, are provided for the No Action Alternative and Alternatives 1-4. Appendix F also includes a description of the modeling assumptions applied to each alternative, including Alternative 4. Appendix F, Attachment 2-1 Model Assumptions does identify a target of 55% unimpaired flow for the Feather River but also indicates that condition would be subject to an off ramp of 35% unimpaired flow during the driest years or limited during significant bypass weir flow events. The modeling output depicted in Appendix F, Tables 4-1 through 4a-4 and Figures 4-1 through 4a-18 suggest no change in storage or elevation frequencies between the No Action Alternative and Alternative 4 during dry years and critically dry years during low storage conditions.
41	4	The reduced Lake Oroville storage would have devastating impacts to existing water rights, the agricultural economy, the groundwater basin, residential water supplies, critical habitats and socioeconomic well-being of our communities. Existing water diversions in northern Sacramento valley will be dramatically curtailed or possibly eliminated. In Butte County, surface water diversions meets two-thirds of the agricultural, community and ecologic water demand. With the loss of surface water rights, local water demand would be shifted to	The groundwater model used to evaluate impacts to groundwater levels simulates conditions throughout the Central Valley, including northern California. This model simulates conditions through multiple hydrologic conditions including drier and wetter periods. Table I.2-1 lists the water year types that are simulated in the model. The following figures show the simulated change in groundwater elevation in the Sacramento Valley due to each of the four action alternatives during Dry and Critical Dry year types.

Ltr#	Cmt#	Comment	Response
		groundwater. The increased burden on the groundwater basin will have severe economic, environmental and societal impacts. The economic costs to local family farms would be enormous. With the loss of surface water rights, many small family farms would have to bear the cost of installing irrigation wells. The impact to the groundwater basin would be significant. An analysis has shown that a shift of 500,000-acre feet would result in a lowering of the groundwater elevation by over 10 feet in Butte County. The lowering of the basin would increase costs for those who rely on wells and would jeopardize the water supply for hundreds of residents that rely on shallow domestic wells. These impacts would hamper the efforts of Butte County and other local agencies to implement sustainable groundwater management through the Sustainable Groundwater Management Act (SGMA). Taking away these water rights would be a frontal attack on historic water rights that created a viable agricultural economy, supported the natural environment and provided a foundation for our communities for generations. The Bureau has a legal and moral obligation to evaluate and mitigate the health, safety and societal costs including the impacts to disadvantaged communities within the Project area.	• Alternative 1 Figures I.2-53 (dry) and I.2-54 (critical dry) • Alternative 2 Figures I.2-58 (dry) and I.2-59 (critical dry) • Alternative 3 Figures I.2-63 (dry) and I.2-64 (critical dry) • Alternative 4 Figures I.2-68 (dry) and I.2-69 (critical dry) Each of these figures show a groundwater decline of 2 feet or less across the Sacramento Valley. Table I.2-2 shows that groundwater pumping across the Central Valley, on average, would decrease 264 TAF [3.7%] (Alternative 1), 535 TAF [7.5%] (Alternative 2), and 513 TAF [7.1%] (Alternative 3) versus the No Action Alternative. Regional economic impacts from reduced groundwater pumping are discussed in Appendix Q (Sections Q.2.3.1.2, Q.2.4.1.2, and Q.2.4.1.2 for Alternatives 1, 2, and 3, respectively).s Groundwater pumping is expected to increase across the Central Valley an average of 26 TAF [0.4%] in Alternative 4 versus the No Action Alternative.
41	5	The manner in which the EIS and the revised COA are constructed would increase the burden on the SWP system. For example, the raising of Shasta Dam could result in an additional 634,000 acre-feet of storage. The EIS provides that the CVP would receive the full benefits from the raising of Shasta Dam (D-1 .17). With increased responsibility of the SWP system to meet in-delta flow standards through the revised COA, this action would exacerbate the impacts to Lake Oroville.	The EIS summarizes the anticipated effect of the alternatives on water supply for the water users whose supplies would be affected in Chapter 5 and describes in detail these anticipated changes in Appendices F and H. That includes a presentation of anticipated changes in SWP water supplies.
41	6	The EIS proposes that water right holders in the Sacramento Valley will transfer more water south of the delta by extending the period for water transfers to November. The EIS should not expect additional water from the northern Sacramento Valley. The EIS must consider that some of the water supplies currently being exported may not be available in the future due to increased demand in the areas in which the water currently being exported originates. California law expressly recognizes the prior right of communities in those areas to water currently being exported, to the extent that water will be needed to adequately supply the beneficial needs of those areas (Water Code, §§ 10505, 10505.5, 11460, 11463 and 11128; also id., §§ 12200-12220). That demand for water and the need to sustain groundwater basins, as required through the implementation of the SGMA, will increase in the Delta and north as population	The EIS notes in Chapter 3, that the action alternatives include the same volume of transfers as are included in the No Action Alternative, but Reclamation and DWR would provide an extended transfer window from July 1 through November 30. Allowing fall transfers is expected to have water supply benefits and may provide flexibility to improve Sacramento River temperature operations during dry conditions, such as those that occurred during the 2014–2015 drought conditions. Quantities and timing would be similar to the transfers implemented in 2014. The EIS does not propose that water right holders in the Sacramento Valley will transfer more water south of the delta.

Ltr#	Cmt#	Comment	Response
		grows. The EIS fails to follow the principle of regional self-reliance as required by state law.	
41	7	The socioeconomic, recreational and environmental impacts to Butte County and the region are significant. The EIS ignored to evaluate or mitigate the impacts to Regional Economics (p. E-63) , Recreational {p . E-64) and Environmental Justice (p. E-64). The Bureau must include in the EIS an analysis of the impacts from the Project.	It is unclear what impacts to economics, recreation, and environmental justice in Butte County the commenter feels are missing. An analysis of impacts to these resource areas has been included to the extent there appears to be impacts to the project area and from any proposed changes to Feather River operations. These project-level and program-level regional economic, recreation, and environmental justice effects of the implementing the alternatives are discussed in Sections 5.11 Regional Economics, 5.13 Recreation, and 5.14 Environmental Justice.
41	8	The revised COA and the EIS would result in unmitigated socio-economic, recreational and groundwater impacts to Butte County. We implore the Bureau to withdraw the EIS in its current form. Any subsequent, EIS must take into account the Delta Conveyance Project and Voluntary Settlement Agreements and include a complete evaluation and mitigation of impacts.	Please refer to response 41-2 and Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS, the SWRCB's ongoing process to update the Bay-Delta Water Quality Control Plan. The EIS evaluated the former California WaterFix proposal in the cumulative analysis.

Ltr#	Cmt#	Comment	Response
42	1	The project is an attempt to maximize exports without examining how exports adversely affect numerous beneficial uses such as fish and wildlife, and beneficial users such as Delta agricultural diverters. Current CVP and State Water Project ("SWP") efforts are and have been geared to attain maximum exports but are restrained by relevant regulatory and statutory obligations, in large part to protect fisheries. Given that the current operations of the CVP and SWP adversely affect endangered and other species, one cannot logically shift operations to increase exports without further adversely affecting fisheries. The project is an exercise in a zero sum game which cannot increase one use (exports) without adversely affecting other uses (fish and wildlife and Delta farmers).	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. The alternatives evaluated in the Draft EIS address the purpose of the action to: "continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species." Please refer to Chapter 2, Purpose and Need for a full description. The Draft EIS discloses the potential environmental effects of the alternatives to address the purpose and need for the action. The commenter is referred to Chapter 5, Environmental Consequences and applicable technical appendices for detailed analyses of the potential effects of the alternatives.
42	2	The project appears to assume that the USBR can ignore or eventually alter existing ESA and other regulatory requirements. Although such an effort is hypothetically possible, the premise is unsupportable given that under the current level of regulatory requirements the endangered fish species continue to decline towards extinction. Only by decreasing that which is harming the fisheries and increasing the supply might additional water be exported.	Please see Master Response 1, Responses to General Comments, regarding the purpose and need for Reclamation's action as well as the relationship to the State Water Resources Control Board's update to the Bay-Delta Water Quality Control Plan and for a discussion of public trust resources. Also see Master response 2, Related Regulatory Processes, regarding the process for obtaining

Ltr#	Cmt#	Comment	Response
			the Biological Opinions from U.S. Fish and Wildlife Service and National Marine Fisheries Services.
42	3	Rather than proposing this project, the USBR should instead undertake a simple two-fold investigation and adjust its operations according to the results. First, the USBR should calculate just how much water is available each year given the expected hydrology and the needs of superior water rights such as riparian, pre-914 and appropriative right holders. Second, it should calculate what actions and how much water is necessary to mitigate the adverse effects of CVP operations on other uses and users, including full compliance with all regulatory mandates. Thereafter, the amounts of water for export can be determined. Such an inquiry would in all likelihood reveal that the amounts available for export are much less than currently occurring and thus the underlying purpose of this project becomes moot.	Please refer to response to comment 42-2.
42	4	THE DEIS FAILS TO ANALYZE THE POTENTIAL IMPACTS OF THE PROJECT AT STATIONS DESIGNATED AS COMPLIANCE LOCATIONS FOR WATER QUALITY OBJECTIVES. The DEIS makes reference to State Water Resources Control Board ("SWRCB") Decision D-1641 as the controlling regulatory framework for its water rights issued by the state of California. The document provides modeling data for various locations in the Delta but fails to provide modeling data for three compliance locations in the southern Delta. The USBR's permits require it to comply with the D-1641 water quality objectives for the protection of agricultural beneficial uses as specified in the Decision. Those specified locations include "San Joaquin River at Brandt Bridge," "Old River near Middle River" and "Old River at Tracy Road Bridge." [see for example Table 2, D-1641 at page 182.] No model results for these locations are in the DEIS. The DEIS asserts the authors ran (or caused someone to run) the model DSM2-Qual in order to analyze the project's effects on water quality in the Delta. DSM2 contains hundreds of "nodes" which cover the entire lengths of virtually all Delta channels. The model can and does produce outputs (results) for every such node. Therefore the model results produced by the USBR for the DEIS contain the effects on water quality not only at the various locations set forth in the document, but also for the three D-1641 compliance locations listed above. [Water quality is evaluated in Electrical Conductivity, or "EC" a measure of	Please see Master Response 1, Responses to General Comments for a discussion regarding the appropriate use of program and project level analysis in the EIS. Please also see Master Response 5, Adequacy of Analysis and Mitigation for additional discussion regarding the adequacy of the analysis contained in the EIS. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding drawing conclusions from model results.

Ltr#	Cmt#	Comment	Response
		salts in the water. For the three compliance locations mentioned above, the objective is 700 EC April-August and I 000 EC September-March.] In general, the water quality objectives for agricultural beneficial uses at the three omitted locations are where exceedances or violations most often occur. Hence, the DEIS omits the model results by which one can determine the effects on agricultural beneficial users in the southern Delta; the place most often impacted (harmed) by bad water quality. Attachment A [ATT1] hereto is an example of water quality exceedances occurring at the above listed three compliance locations. The data contained in the Attachment shows that not only are the water quality standards violated, but also that the EC values are often near the objective, that is to say approaching the 700 or 1000 EC objectives specified in D-1641. By not being able to see the model data for the three compliance locations, the public is unable to determine if the impacts of the project would result in a water quality violation. The DEIS is therefore inadequate.	
42	5	THE DEIS FAILS TO ANALYZE HOW MODELED CHANGES IN WATER QUALITY WILL AFFECT BENEFICIAL USES/USERS PROTECTED BY WATER QUALITY OBJECTIVES. Appendix F to the DEIS contains hundreds of Tables and Figures setting forth the modeling outputs/data of the impacts on water quality at various locations throughout the Delta. [Some of the Figures are frequency graphs indicating how often a change in water quality might occur, and will be addressed later hereinbelow.] Those Tables and Figures show varying differences between {for example) the EC in a certain month at a certain location under the No Action Alternative and the other four Alternatives. See for example Figure 5-3 Sacramento River at Rio Vista, Above Normal Year Average EC. That Figure shows a modeled EC of approximately 130 higher under Alternative I than under the No-Action Alternative at a certain time. The DEIS generally labels such impacts as not being significant, but makes no explanation as to how that conclusion was made.	The EIS notes in Section 5.2.1, that while there would be higher monthly average EC levels and chloride concentrations under the action alternatives relative to the No Action Alternative at certain Delta locations in some months and water year types, the CVP and SWP would continue to be operated in real-time to meet the Bay-Delta Plan EC and chloride objectives for protection of Delta beneficial uses. Thus, changes to these beneficial uses, as affected by Delta EC levels and chloride concentrations, would not be expected under the action alternatives. Please also see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding drawing conclusions from model results.
42	6	When a project is expected to result in an increase of 100 EC or more at a certain location, that is only the beginning of the analysis. Once that number is calculated, the next step is to determine if and the degree to which that increase in EC might affect the environment and/or other beneficial users. First, if the water quality objective is 700 EC and the model predicts the No-Action Alternative will have an EC at that location of 650 but that Alternative I will cause a I 00 EC increase, then the model indicates an impact by way of a	The EIS notes in Section 5.2.1, that while there would be higher monthly average EC levels and chloride concentrations under the action alternatives relative to the No Action Alternative at certain Delta locations in some months and water year types, the CVP and SWP would continue to be operated in real-time to meet the Bay-Delta Plan EC and chloride objectives for protection of Delta beneficial uses. Thus, changes to these beneficial uses, as affected by Delta EC levels and chloride concentrations, would not be expected under the

Ltr#	Cmt#	Comment	Response
		water quality violation. [That is why the failure to include data from the three compliance locations mentioned above is so important.] However, it is known that the DSM2 model is not reliable in predicting EC in southern Delta channels. As evidence of this is Attachment B [ATT2] hereto which shows a comparison of the modeled EC and the measured EC. As can be seen by this Attachment, sometimes the model under predicts the EC by hundreds. Because of this unreliability, it is incumbent on the authors of the DEIS to show whether a11y increase in EC might actually result in a violation of a water quality objective in any location in the Delta. Put another way, the model may be only making comparisons between alternatives but that does not yield usable result. The analysis must estimate what the predicted (modeled) increase in EC will do to actual EC. The DEIS simply fails to connect the modeled world to reality. Critics of this analysis assert that models only do comparisons of scenarios and do not predict actual conditions. Whether that is valid or not, an environmental document must analyze whether adverse impacts will occur or not. Unless the "hypothetical" model results are somehow translated into actual, real world conditions, no real NEPA analysis has been done. To say a project might increase EC by 100 when one does not know if that increase approaches and exceedance, causes an exceedance or exacerbates and exceedance means the analysis is meaningless.	action alternatives. Please also see Master Response 5, Adequacy of Analysis and Mitigation, for additional discussion regarding the adequacy of the analysis contained in the EIS. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding drawing conclusions from model results.
42	7	The DEIS makes no effort to mention much less analyze what any increase in Delta channel water EC means to agriculture (or other beneficial uses). At best, the DEIS informs the public of changes in channel water quality only. The question is not just "what increase in EC is expected under the Alternatives?" rather the question is "how does a specified increase in EC over certain time frames affect agriculture (or other beneficial users)?" For example, a one day increase in EC of 20 may do one thing (or do nothing) but a 100 EC change over six months may do another thing. How to analyze this? As we saw in the SWRCB WaterFix Change Petition hearing over the past few years (in which the USBR participated) when it comes to analyzing effects of EC on crops, the issue of changes in soil salinity is the metric, not simply changes in source water quality. The channels of the Delta are the source water for in-Delta agriculture. The local farmers divert this water and apply it to their soils for the benefit of their crops. A change in the source water EC does not immediately affect anything (unless the change is very significant). Agronomists and soli scientists look at average annual changes in soil salinity to predict effects on plants and crops.	The EIS notes in Section 5.2.1, that while there would be higher monthly average EC levels and chloride concentrations under the action alternatives relative to the No Action Alternative at certain Delta locations in some months and water year types, the CVP and SWP would continue to be operated in real-time to meet the Bay-Delta Plan EC and chloride objectives for protection of Delta beneficial uses. Thus, changes to these beneficial uses, as affected by Delta EC levels and chloride concentrations, would not be expected under the action alternatives. Please also see Master Response 5, Adequacy of Analysis and Mitigation for additional discussion regarding the adequacy of the analysis contained in the EIS. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding drawing conclusions from model results.

Ltr#	Cmt#	Comment	Response
		For example, although the supply water EC may increase only slightly, if that supply water when applied over a season to agricultural lands causes an increase in soils salinity there may be a substantial and significant adverse impact on the plant or crop. Thus the effects over time of any increase in EC must be analyzed with regard to the soils on which the saltier water is applied, how well the salts in the soil leach or move through the soils and what if any salts are accumulating in the soil. The agronomist or soil scientist would then compare the effects on the soil with the susceptibility of the crops being grown to predict any impacts, using scientifically accepted crop and salinity relationships. This information was presented in detail at the SWRCB WaterFix hearings by SOWA and CDW A. Attachment C [ATT3] hereto contains the written testimony of Terry Prichard and Dr. Michelle Leinfelder-Miles from those hearings, which testimony fully explains the above. It should be noted that although examining the average soil salinity over a season is the accepted method of determining the effects of increased salinity in the applied water, sudden increases in EC during shorter periods can also cause harm to the agricultural crop by interfering with the plants at key times of growth. That issue is also covered at length in the above referenced testimony.	
42	8	With regard to the failure of the DEIS to connect predicted changes in EC with potential harm in the real world, we reference the USBR to other testimony presented at the WaterFix hearings by Dr. Leinfelder-Miles. Her two year study (Attachment D [ATT4]) showed how certain areas of the southern Delta were achieving very low "leaching factors" which means that salts in the applied water were not moving through the soils but were collecting in the soil. That condition, fully know to the USBR indicates that even small increases in EC might be causing adverse impacts beyond that which might be expected. Thus the DEIS' conclusions about EC changes "not anticipated to be significant" are without support unless the effects at particular areas are examined. They were not. The DIES is therefore inadequate by not examining how changes in channel water might affect agricultural beneficial users.	The EIS notes in Section 5.2.1, that while there would be higher monthly average EC levels and chloride concentrations under the action alternatives relative to the No Action Alternative at certain Delta locations in some months and water year types, the CVP and SWP would continue to be operated in real-time to meet the Bay-Delta Plan EC and chloride objectives for protection of Delta beneficial uses. Thus, changes to these beneficial uses, as affected by Delta EC levels and chloride concentrations, would not be expected under the action alternatives. Please also see Master Response 5, Adequacy of Analysis and Mitigation for additional discussion regarding the adequacy of the analysis contained in the EIS. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding drawing conclusions from model results.
42	9	THE MODELED RESULTS ARE PRESENTED IN MONTHLY AVERAGES WHICH MASK THE IMPACTS OF THE PROJECT. The DEIS presents model results in monthly average. See for example Figure 17-1. Old River at Highway 4, Long Term Average EC. In that Figure, we see that the No-Action Alternative has water quality at this location from	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.

Ltr#	Cmt#	Comment	Response
		approximately October 1 through January 15 of about 550 EC. Alternative l has an EC during this same time frame of approximately 750-600. This means that 011 average (over the 1922-2003 time frame) Alternative I results in an increase of about 200 to 50 EC. What does this mean? Since the numbers are given as averages, it means the actual numbers are a spread or range with some being higher than the average and some being lower. The= data provides us with no basis for determining how the increases above the average might affect any beneficial use. What if the average includes six months, a year, or two years of increased EC above the average. In that case the average of a 200 EC increase (as in Figure 17-1) might be significantly more than the 200 increase shown in the Figure.. How much more? How does that additional increase of EC affect agricultural crops? We are left with no ability to measure or analyze the impacts of the projects in any particular year. On average we know the predicted increase in EC, but the average does not tell us anything useful.	
42	10	Attached E [ATT5] hereto is the testimony/written technical report by Thomas Burke, PE also presented at the SWRCB WaterFix hearings. In that testimony, Mr. Burke shows how modeled data presented as averages can hide very significant changes in EC. For example on page 19 of his Technical Report, his Figure 4-5 shows that when the daily information is taken from the model outputs an average number can include huge EC changes, or changes over large periods of time. Sometimes the EC is 600 over the average number and higher than average numbers can occur over periods of six months or more. Any analysis of the impacts of a project cannot rely on "average changes" but must explain just how the project might specifically impact beneficial users. If the average change in EC is 100, but within that average are monthly periods of 200 EC increases, does the project cause significant harm? Only by examining the actual changes of EC can one determine any impacts; averages only hide those specifics. The criticism of this logic is twofold. One, the model doesn't make actual predictions, which was dealt with above. Two, it is asserted that the DSM2 model should not be used for time periods shorter than monthly averages. As to this point, the model ca11 and is used to make daily predictions (see for example Attachment A [ATT1]). In addition and more importantly, unless and until one can see how a project might increase EC during specific times and under specific conditions, there can be no real analysis of impacts. The three and a half months of increases in EC between 200 and 50 shown in Figure l 7-1	The DEIS describes potential water quality effects on users in Section 5.2 Water Quality and Appendix G Water Quality Technical Appendix. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.

Ltr#	Cmt#	Comment	Response
		tell us nothing, but examining a specific year's estimated increases would allow on to determine if soil salinity might increase to the point where damage to crops occurs. This explanation is more clearly set forth in the Review of the DEIS modeling by Mr. Burke; Attachment K [ATT11]. The bottom line is that without examining the worst instances of harm due to the project one cannot make any conclusions about whether or not the project causes significant impacts to the environment or to beneficial users of water. Any assertion that the project betters water quality sometimes has no bearing on if or the degree to which it banns the environment or beneficial users at other times. There is no evidence or science indicating an improvement in water quality at one time somehow "undoes" the harm from a decrease in water quality at another time. Sophistry does not substitute for science.	
42	11	THE MODELING PERFORMED IS KNOWN TO USE BATHYMETRY DAT A/INPUTS WHICH ARE SUBSTANTIALLY INACCURATE/OUTDATED AND THUS UNDERESTIMATES THE IMPACTS OF THE PROJECT ON WATER QUALITY. The DSM2 model is a series of calculations which use the data contained in it and new inputs representing changes pursuant to a new scenario or project. Some of the data already in the model includes information such as how wide a channel is, how deep, how the tide may flow back on forth, how sunlight might affect it during different times of year, etc. These beginning inputs or "assumptions" are intended to reflect what actually happens in the channels themselves. For example if 1,000 cfs of San Joaquin River flow of a certain quality and temperature enters the Delta the model will predict what happens to that water as it moves downstream. How much might be lost to evaporation; how much might be lost to diversions, how the quality might changes due to dilution or further contamination, and how the temperature might change. The model "works" because for every specified channel reach, it calculates what will happen to the volume of water as it moves to another channel reach. It is a logical progression of expected effects. As one might imagine, it is necessary that the model inputs reasonably reflect the actual circumstances in the channels. The model cannot of course be absolutely correct in every aspect, but it must have the general conditions of the channels correct to some acceptable degree. For example, the volume of water passing through each channel according to the model must reasonably reflect what is actually moving through the channel in order that things like the	Reclamation acknowledges that uncertainty is inherent in any project of this geographic and temporal scale. Reclamation has strived to use the best available science throughout the EIS, consistent with the requirements of NEPA and, used its best efforts to find out and disclose the potential effects of the alternatives on water quality. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding appropriate use of model results.

Ltr#	Cmt#	Comment	Response
		calculations of amount of salts or volume are meaningful. Unfortunately DSM2 has been shown to not just be marginally off in some respects, but catastrophically so. Attachment F [ATT6] is additional testimony by Mr. Burke given at the SWRCB WaterFix hearings on behalf of SOW A and CDW A. This testimony shows how recent soundings, or bathymetry done in south Delta channels indicate that siltation in the channels now indicates much shallower channels than the DSM2 model "thinks" exist. For example, his Figure 10 on page 20 indicates the model calculates water movement based on a channel that is 8 feet deep while it is actually only 2 feet. Similarly his Figure 18 shows an 8 foot difference between what the model uses and what reality is. The importance of this cannot be overstated. The model is calculating flows, quantities and the corresponding water quality (and other criteria) that overstate the actual specifics of the water by half or more. Contrary to the model outputs, in actuality less than half the water is moving past certain points which in tum affects how much salt is being moved (or diluted) and what the height of the channel water will be. The only conclusion from this is that the use of the DSM2 model without the (known) updated bathymetry renders the outputs in the DEIS useless. This fundamental error in the model likely explains why model predictions no not always match measured conditions as evidence by Attachment B [ATT2]. [Note only does Attachment B show how far off the model is from reality, but it also shows the model sometimes thinks water quality is getting better when it in fact is getting worse.] It is again important to note the USBR attended the WaterFix hearings and is therefore fully aware of this problem. The updated bathymetry was made available to DWR and anyone else who expressed an interest. Of course the WaterFix data presented in the attachments hereto relates to a much different project. However, the WaterFix data shows just how unusable the DEIS modeling is. The DEIS is therefore inadequate because the model used does not accurately calculate what is happening in the channels of (at least) the southern Delta.	
42	12	THE DEIS IGNORES CURRENT LEGAL OBLIGATIONS OF THE USBR WHICH CONTROL AND LIMIT EXPORT OPERATIONS. First, the DEIS makes a number of references that it complies with D-1641 which in tum means it is meeting its water quality obligations under its state issued licenses. This however is not true. The USBR and DWR are currently in violation of a Cease and Desist Order issued by the SWRCB on January 5,	The Draft EIS evaluated potential changes to salinity in the Delta and discloses in Section 5.2.1.3 that, “EC levels at certain Delta locations under the action alternatives would be higher than those that would occur under the No Action Alternative…”.

Ltr#	Cmt#	Comment	Response
		2010 ("CDO"); Attachment G [ATT7] hereto. Briefly, the CDO was the second such order issued against DWR and the USBR. It required the USBR and DWR to submit an operations plan whereby it would meet the southern Delta water quality objectives. The underlying purpose of the hearings leading to the CDO was of course that the objectives were being violated on a regular basis. The CDO had a "drop dead date" of January I, 2013 by which the operations plan must be submitted. Neither DWR or the USBR met that deadline. Enforcement of this clear violation of a cease and desist order has been absent and it is not known whether the SWRCB will ever enforce it or the water quality objectives in the southern Delta. Regardless of the SWRCB's inexplicable failure to enforce its own order, the point is that the CDO and the information in Attachment A [ATT1] clearly shows that the USBR is not now and likely will not in future meet its obligations with regard to the southern Delta water quality objectives; those objectives for which no modeling information was provided in the DEIS. Until the USBR determines out how it will meet these obligations, it cannot base its environmental review on the false statement that it is going to meet all of its permit requirements. The facts indicate that both the No-Action Alternative and all other alternatives are not modeled correctly because they assert compliance with the southern Delta salinity objectives. [Note: It does not matter if the DEIS examines the current 700/1000 EC objectives or the recently adopted (but not enforced) 1000 EC objectives. In either case the data provided herein as well as the USBR's own records indicate regular exceedances of the 1000 EC limit.]	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, for additional information about modeling for the CVP and SWP systems. Please see Master Response 1, Responses to General Comments, for additional detail on compliance with D-1641.
42	13	This failure to obey regulatory mandates [SWRCB’s CDO] is even more important because of the harm being experienced by southern Delta farmers due to the operations of the CVP. Briefly, the CVP decreases flows of fresh water quality into the southern Delta, lowers water levels in the area and cause hundreds of thousands of tons of salts to enter the San Joaquin River (which salt makes its way to the southern Delta). See Attachment H [ATT8]. These impacts of the CVP result in damage each year to local diverters. Attachment I [ATT9] hereto includes testimony by southern Delta farmers evidencing the harm they experience due to high and persistent salinity in the southern Delta. Hence, the DEIS is analyzing some hypothetical situation where objectives are being met and nobody is being harmed when the reality is the opposite. Since we don't have any reasonable analysis one can only conclude logically that increasing CVP export pumping (the goal of the project), the ongoing harm	Please see response to comment 42-12. The analysis of potential effects to agricultural production are found in Chapter 5, Section 5.12 of the EIS. Please see Appendix R and Appendix F for information regarding the modeling of potential land use and agricultural effects. Please see Master Response 5, Adequacy of Analysis and Mitigation, for a discussion of the adequacy of the analysis in the EIS.

Ltr#	Cmt#	Comment	Response
		being experienced by southern Delta farmers due to current exports will also increase.	
42	14	The USBR is operating in violation of CVPIA, the federal act mentioned in the DEIS. The DEIS states on page 3-13 that water transfers occur under the No-Action Alternative and include "groundwater substitution" as one potential source for such transfer water. CVPIA Section 3405 (a) (1) (I) precludes any transfer unless it is of water that would have been previously consumptively used or irretrievably lost to beneficial use. This federal statute prohibits a transferee substituting the transferred water with groundwater.	Reclamation is not approving water transfers or operating the CVP in violation of CVPIA. See Master Response 1, Responses to General Comments regarding Reclamation's compliance with state and Federal laws. In the No Action Alternative, Reclamation would continue to approve water transfers consistent with CVPIA and existing water transfer policies. CVPIA does not prohibit groundwater substitution water transfers.
42	15	The federal Public Law 108-361 (enacted on October 25, 2004) places specific, new obligations on the USBR and restates other obligations. Section 103 (d) (2) (A) (i) (bb) requires the USBR to install permanent barriers in the south Delta no later than September 30, 2007. [The barriers are meant to partially mitigate the water stage and quality impacts in the southern Delta caused by the USBR and DWR.] No such installation has occurred nor is it contemplated.	The law cited requires, "…Federal agencies to cooperate with the State to accelerate installation of the permanent, operable barriers in the South Delta…", which has been accomplished over many years. Following several years of effort, NMFS suspended formal consultation for the South Delta Improvements Program in 2007. Continuing efforts are being made to find a feasible permanent solution.
42	16	Public Law 108-361 also requires under Section 103 (d) (2) (D) (i) that within one year after the date of the Act, the USBR shall develop and initiate implementation of a "program to meet all existing water quality standards and objectives for which the Central Valley Project has responsibility." This mandate reaffirms the USBR's obligations to meet the southern Delta water quality objectives regardless of the SWRCB's enforcement of them or the COO relating to them. In February of 2006, four months late, the USBR issued its "Program to Meet Standards" pursuant to PL 08-361 Unfortunately that document sets forth an outline of how the USBR might meet some of its obligations and clearly omits the three southern Delta water quality objectives. In light of these statutory provisions, the USBR cannot legally increase exports before it complies with federal law.	Reclamation disagrees with the commenter's assessment of Reclamation's compliance with southern Delta water quality objectives and PL 108-361.
42	17	California law precludes exports unless in-Delta needs are first satisfied. California Water Code Sections 12200 et.seq. require the USBR and DWR to provide salinity control and an adequate water supply in the Delta as a condition to exports. These statutes were interpreted by California Courts in United States vs. State Water Resources Control Board 182 Cal.App. 3d. 82 (1986). In that decision the court concluded that Sections 12200 et.seq. "prohibits project exports from the Delta of water necessary to provide water to which the Delta users are 'entitled' and water which is necessary for salinity control and an adequate supply for Delta users." Id at 1398. [Emphasis added.] See Attachment J [ATT10] hereto.	Reclamation operates the CVP, including the export of water at CVP facilities, in compliance with applicable state and Federal law, including the terms and conditions of its water rights permits and licenses.

Ltr#	Cmt#	Comment	Response
		It is important to point out that the statutes prevent export of three types of water; water to which the Delta users are entitled, water for salinity control and an adequate supply for Delta users. The third category addresses any concerns that in-Delta users like southern and central Delta farmers, may not all have valid water rights at all times. Exports cannot be of water that is or may be necessary for an adequate in-Delta supply.	
42	18	Neither DWR or the USBR are willing to undertake negotiations to provide an adequate supply of water for in-Delta users though each is required to do so. The case on its face prohibits exports from the Delta unless all three in-Delta needs are met. At the very least, any exports when salinity standards are not being met or during times when the projects assert insufficient in Delta water rights exist to cover full diversions constitutes a violation of both 12200 et.seq. and the case law specified in US vs. SWRCB. This project seeks to increase exports before complying with statutory mandates which is in violation of the law and makes the modeling done in support of the DEIS inadequate.	Please see response to comment 42-17. Reclamation's modeling assumed Reclamation would operate the CVP in compliance with applicable laws, including the terms and conditions of its water rights permits and licenses.
42	19	[ATT1: Email from DWR Re: notification of Exceedance of the Southern Delta Agricultural objective of San Joaquin River at Brandt Bridge, August 17, 2018.]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
42	20	[ATT2: Email from DWR dated August 4, 2018 Re: WQ & WL forecast for August 2-August 22]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
42	21	[ATT3: Testimony of Terry Pritchard Before the State Water Resources Control Board Hearing regarding petition requesting changes in water rights of the Department of Water Resources and U.S. Bureau of Reclamation for the California Waterfix Project]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
42	22	[ATT4: Leaching Fractions Achieved in South Delta Soils under Alfalfa Culture 2014 Year-End Report February 1, 2015 Project Leader: Michelle Leinfelder-Miles, Farm Advisor, University of California Cooperative Extension, San Joaquin County]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
42	23	[ATT5: September 2016 Technical Report	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

Ltr#	Cmt#	Comment	Response
		Evaluation of Impacts from the California Water Fix on The Central and South Delta Prepared by: HIS Hydrologic Systems 936-B 7th Street, Suite 303 Novato, California 94945 Prepared for: The South Delta Agency Parties 4255 Pacific Avenue, Suite 2 Stockton, California 95207]	
42	24	[ATT6: State of California State Water Resources Control Board Hearing in the matter of California Department of Water Resources and United States Department of the Interior, Bureau of Reclamation Request for a Change in Point of Diversion for California Water Fix Rebuttal Testimony of Thomas K. Burke, Part 2]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
42	25	[ATT7: State of California State Water Resources Control Board Order WR 2010-0002 In the matter of cease and desist order WR 2006-0006 against the Department of Water Resources and the United States Bureau of Reclamation in Connection with Water Right Permits and License for the State Water Project and Central Valley Project Sources: Sacramento and San Joaquin Rivers and their tributaries, and the Sacramento-San Joaquin Delta Estuary County: San Joaquin]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
42	26	[ATT8: Effects of the CVP upon the Southern Delta Water Supply Sacramento-San Joaquin River Delta, California June 1980 Prepared jointly by the Water and Power Resources Service and the South Delta Water Agency]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
42	27	[ATT9: Before the State Water Resources Control Board Hearing regarding petition requesting changes in water rights of the Department of Water Resources and U.S. Bureau of Reclamation for the California Water Fix Project Testimony of William “Chip” Salmon]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
42	28	[ATT10: United States vs. State Water Resources Control Board 182 Cal.App 3d82 (1986) at page 139 provides:]	The commenter provided this attachment in support of their comments. Those comments are responded to in these responses to comments. No further response is necessary.
42	29	[ATT11: Review of Delta modeling used in the BA referenced in the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and the State Water Project Thomas Burke, Hydrologic Systems]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.

Ltr#	Cmt#	Comment	Response
43	1	Reclamation proposes to increase exports from the Delta to increase water delivered to its federal water contractors in the project area in the Central Valley. Reclamation knows full well that increasing south Delta exports is likely to cause further environmental degradation in the Central Valley and add to the risk of extinction of many Central Valley endangered species, most notably salmon, steelhead, sturgeon, and smelt. The proposed future operation (LTO Plan) would simply drop many existing ESA restrictions that protect endangered species and their critical habitat, in order to increase Delta exports. Consultation requires NMFS and USFWS to approve the LTO Plan or add restrictions, as they did in 2008/2009. Additional restrictions are not expected given recent guidance and directives from the Commerce and Interior departments on ESA compensatory mitigation requirements [Footnote 1: See for example the Endangered and Threatened Wildlife and Plants; Endangered Species Act Compensatory Mitigation Policy issued by the US Fish and Wildlife Service on July 30, 2018. Available at: https://www.federalregister.gov/documents/2018/07/30/2018-16171/endangered-and-threatened-wildlife-and-plantsendangered-species-act-compensatory-mitigation-policy]	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Reclamation submitted a Biological Assessment to the USFWS and NMFS for formal consultation under the Endangered Species Act. That Biological Assessment included a proposed action which is intended to the be the same as Alternative 1 in this EIS. Thus, non-jeopardy Biological Opinions will result in this NEPA document covering Reclamation's proposed action, without substantial further requirements from the ESA process. The impacts to aquatic species including salmon, steelhead, sturgeon, and smelt were analyzed for each Alternative including any impacts from changes in water deliveries. Please refer to Appendix O, Aquatic Resources Technical Appendix for a detailed analysis.
43	2	The DEIS states the purpose of the Proposed Action in a manner that is unlawfully narrow, disallowing evaluation of reasonable alternative that would not increase water supply deliveries and optimize power generation. This	Please see Master Response 1, Responses to General Comments, regarding the purpose and need.

Ltr#	Cmt#	Comment	Response
		unlawfully narrow project purpose thwarts the mandate of the National Environmental Policy Act to support reasoned decision making.	
43	3	The previous operations of the CVP and SWP have in aggregate created baseline conditions (the No Action Alternative) that cause jeopardy to ESA-listed species and adversely affect critical their habitat. The DEIS fails to disclose this condition. In addition, the methodology of comparing project alternatives to the degraded baseline fatally flaws the DEIS's cumulative effects analysis.	As stated in Section 3.3, No Action Alternative, "Under the No Action Alternative, Reclamation would continue with current CVP operation in coordination with DWR's SWP operation. The No Action Alternative includes implementation of the 2008 USFWS BO and 2009 NMFS BO and would continue current management direction related to implementation of these BOs." Reclamation has included to the best of their ability, the current conditions in the modeling and analysis for the No Action Alternative. Comparison of the alternatives to the No Action Alternative is essential to analyzing the changes that could occur as a result of implementation of the alternatives. These changes are taken into account in the cumulative effects analysis.
43	4	The Preferred Alternative in the DEIS, Alternative 1, as well as Alternatives 2 and 3, would cause jeopardy under the ESA and adversely affect critical habitat. On their face, none of these alternatives is a reasonable alternative under NEPA. Even the apparent environmentally superior alternative, Alternative 4, contains elements that would likely cause jeopardy and adversely affect critical habitat; at minimum, it must be revised to correct its deficiencies.	Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives and refinements made to Alternative 1. Please see Master Response 2, Related Regulatory Processes, regarding the issuance of Biological Opinions.
43	5	The DEIS describes numerous proposed measures in insufficient detail to allow reasoned evaluation. The DEIS improperly uses a program-level analysis to avoid disclosing actions in sufficient detail to allow such evaluation. Even if detail for project-level construction is presently unknown, the DEIS must describe the proposed measures with sufficient clarity to allow a quantification of their ascribed effects or benefits and to understand the certainty of their implementation. As stated, many of the proposed measures are empty promises or plans to make plans, often contingent on future unrelated actions that may or may not actually occur. Other measures or actions included as part of the Proposed Action are already being implemented, which the DEIS should have described as part of baseline conditions.	Please see Master Response 5, Adequacy of Analysis and Mitigation regarding sufficiency of the analysis of the alternatives and program-level analysis. The commenter is correct that some measures included in Alternative 1 have already been implemented or are underway. These measures have been included in the No Action Alternative and there is no impact in relation to the No Action Alternative under Alternative 1. Please see Appendix D, Alternatives Development Technical Memorandum, for additional detail on components included in each Alternative.
43	6	The DEIS proposes that the Preferred Alternative would make compliance with the Central Valley Project Improvement Act (CVPIA) revocable at the discretion of the Secretary of the Interior. The DEIS fails to disclose that exercise of such discretion would be contrary to law and would unilaterally overturn the will of Congress.	See Master Response 1, Response to General Comments, for additional detail on Reclamation's compliance with CVPIA.

Ltr#	Cmt#	Comment	Response
43	7	The DEIS appears to include as part of the Preferred Alternative a raise of Shasta Dam and Shasta Reservoir. The DEIS fails to disclose that a Shasta raise would be contrary to California law.	The Shasta Dam raise project is not in any of the alternatives in this EIS. It is included in Appendix Y, Cumulative Methodology, as a reasonably foreseeable future action and therefore is considered in the cumulative condition. It has its own EIS for construction and operation but no Record of Decision has been signed.. The operation of the CVP under Alternative 1 would be the same as the operation of the CVP with Shasta Dam raise, unless additional environmental compliance is done to modify operations. Appendix D1 has been modified to remove the operation of a Shasta Dam raise. The description of Alternative 1 has been revised to further clarify the proposed improvements to Shasta storage and operation.
43	8	The DEIS fails to quantify the benefits of a healthy ecosystem and to show how it makes valuations of resources other than water supply and power generation and sales.	EIS Section 2.2 Purpose and Need, describes why the action is being undertaken by Reclamation. The purpose is the continued operation of the CVP for its authorized purposes with the intent of maximizing water deliveries and optimizing marketable power consistent with other obligations, including obligations under the CVPIA and ESA. The need of the action is to use updated scientific information to better meet the statutory responsibilities of the CVP. The DEIS discloses the impacts on the environment as a result of selecting and implementing the project alternatives but is not required to place a economic value on each of these impacts or changed conditions. The DEIS does address economic effects in Section 5.11 Regional Economics as well as Appendix Q, Regional Economics Technical Appendix.
43	9	The Proposed Action would drive the final nail in the coffin of threatened and endangered Central Valley fish. Reclamation must develop a new Proposed Action that complies with the law and issue a recirculated DEIS in order to correct the deficiencies under NEPA that we describe below.	Please see Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS. Please see Master Response 4, Alternatives Formulation, regarding refinements made to Alternative 1.
43	10	The Statement of Purpose in the DEIS is unlawfully narrow. Section 1.1 of the DEIS, “Purpose of this Environmental Impact Statement,” states: Reclamation prepared this environmental impact statement (EIS) to analyze potential modifications to the continued long-term operation of the CVP, for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. This EIS evaluates alternatives to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species [Footnote 2: DEIS, p. 1-1/ [PDF Page] 19.].	Please see response to comment 43-2 regarding the project purpose. A range of alternatives that meet the project purpose were evaluated in this EIS. Alternative 4, in fact, would reduce water deliveries from current deliveries. For additional detail on development of alternatives and requirements for alternatives analysis please see Master Response 4, Alternatives Formulation. For additional detail on the screening process of alternatives please see Appendix D, Alternatives Development.

Ltr#	Cmt#	Comment	Response
		This statement of purpose states as a foregone conclusion an alternative that an EIS is supposed to evaluate, as an alternative. The operation of the CVP to “maximize water supply deliveries and optimize marketable power generation” is not the only manner in which the CVP can meet its “authorized purposes,” which include protection of fish and wildlife as well as meeting water supply and delivering power. By stating one alternative for operating the CVP as the purpose of the project, the DEIS fails to disclose that very purpose as the source of impacts to listed species and other aquatic resources. It disallows up front alternatives that would modify or avoid impacts to listed species by reducing water supply deliveries or modifying hydropower operations [Footnote 3: See City of Carmel-By-The-Sea v. U.S. Dep’t of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997) (“The stated goal of a project necessarily dictates the range of ‘reasonable’ alternatives and an agency cannot define its objectives in unreasonably narrow terms”)]. The 2008 U.S. Fish and Wildlife Biological Opinion on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP) began the Project Description as follows: “The proposed action is the continued long-term operation of the CVP and SWP.” [Footnote 4: U.S. Fish and Wildlife Biological Opinion on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP), 2008 (“2008 USFWS BiOp”), p. 1.] This was a much fairer statement of the Proposed Action. Reclamation should recirculate the DEIS with a statement of purpose that does not impermissibly narrow alternatives.	
43	11	The No Action Alternative fails to disclose the existing condition of affected fisheries and is not sufficient to avoid jeopardy to Delta smelt and listed salmonids or to protect other public trust fishery resources consistent with applicable law. 1. The DEIS ignores the recent condition of pelagic and salmonid species. The DEIS fails to acknowledge and describe the extent and magnitude of the declines of pelagic and salmonid fisheries in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary and tributary rivers. The California Department of Fish and Wildlife’s (CDFW) Fall Midwater Trawl (FMWT) indices establish that, between 1967-1971 and 2014-2018, populations of striped bass, Delta smelt, longfin smelt, American shad, splittail and threadfin shad have declined 98.5, 99.4, 99.9, 52.6, 98.6 and 93.3 percent,	The No Action Alternative presented in the EIS both meets NEPA requirements and follows Reclamation’s NEPA manual. Please refer to Master Response 1, Responses to General Comments, regarding requirements of the NEPA analysis and process. Please also see Master Response 2, Related Regulatory Processes, regarding the relationship of the 2008/2009 Biological Opinions to the EIS and NEPA process. For additional information regarding the No Action Alternative and assumptions, please refer to Master Response 3, Baseline and No Action. The decline of California native fishes is discussed in EIS Chapter 2, Purpose and Need, Section 2.1, Background. Additionally, EIS Appendix O, Aquatic Resources Technical Appendix, Section O.2, Background Information, describes aquatic resources by watershed and by species, including population

Ltr#	Cmt#	Comment	Response
		respectively [Footnote 5: CDFW FMWT Monthly Abundance Indices, http://www.dfg.ca.gov/delta/data/fmwt/indices.asp.]. Recent Delta smelt surveys have been dismal. For example, CDFW's 2018 20-mm survey index was incalculable due to low catch; the Summer Townet Survey index for 2017 was 0.2, the third lowest on record following two years in which the index was zero; the FMWT 2018 index was zero; and the 2019 Spring Kodiak Trawl index was 0.4, the lowest index on record [Footnote 6: USBR, Effects Analysis for the Delta Smelt Fall Habitat Action in 2019, p. 7; https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=39803]. Survey results for Delta smelt led U.C. Davis fisheries professor Peter Moyle to warn state officials to prepare for the extinction of Delta smelt [Footnote 7: http://www.capradio.org/44478, http://californiawaterblog.com/2015/03/18/prepare-for-extinction-of-delta-smelt/, http://news.nationalgeographic.com/2015/04/150403-smelt-california-bay-delta-extinction-endangered-speciesdrought-fish/]. While Delta smelt is particularly at risk of extinction, having lost more than 99% of its historical population, other species in the project area are also at high risk of extirpation. Additionally, Bay species that benefit from higher Delta outflow are ignored in the DEIS. The U.S. Fish and Wildlife Service's (USFWS) Anadromous Fisheries Restoration Program (AFRP) documents that, since the 1967-1991 baseline period, natural production of Sacramento River mainstem winter-run Chinook salmon and spring-run Chinook salmon have declined by 88.8 and 97.96 percent, respectively, and are only at 5.5 and 1.02 percent, respectively, of doubling levels mandated by the Central Valley Project Improvement Act, California Water Code (CWC) and California Fish & Game Code. Natural production of San Joaquin River System fall-run Chinook salmon has declined since 1967-1991 by 54.5% and is only 22.7% of doubling levels. [Footnote 8: https://www.fws.gov/lodi/anadromous_fish_restoration/documents/Doubling_goal_graphs_063016.pdf]. Natural production since the 2008 USFWS and 2009 NMFS Biological Opinions (BiOp's) [Footnote 9: 2008 FWS BiOp, National Marine Fisheries Service, Biological and Conference Opinion for the Long-Term Operations of the Central Valley Project and the State Water Project, 2009. ("2009 NMFS BiOp").]. were issued is significantly below production in the initial 15 years of the doubling period (1992-2007). The DEIS ignores the continuing decline of pelagic and salmonid species following construction of the SWP and the accelerating decline in recent years	declines, historical versus recent run sizes of salmonids, and species that benefit from increased Delta Outflow. Please also refer to EIS Appendix O, Section O.2.10.1.7, Delta Smelt, for discussions regarding abundance indices, including data from the fall midwater trawl, spring Kodiak trawl, summer townet survey, and 20mm survey index.

Ltr#	Cmt#	Comment	Response
		despite the BiOp's. This continuing decline of fisheries jeopardizes the existence of species already on the brink of extinction. The failure to acknowledge and analyze the continuing decline of fisheries and impending extinction of one or more species, despite the 2008 and 2009 BiOp's with their Reasonable and Prudent Alternatives (RPA's), renders the DEIS deficient as a NEPA document.	
43	12	The DEIS does not comply with NEPA's fair disclosure and environmental setting requirements because it fails to acknowledge, analyze or discuss the numerous violations of water quality standards, the pattern and practice of weakening water quality standards, failures to comply with biological opinion RPA's, and other specific requirements pertaining to the Delta. a. The DEIS ignores and fails to describe the CVP/SWP's numerous violations of adopted water quality standards. The State Water Resource Control Board's (SWRCB or Board) Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) and the Central Valley Regional Water Quality Control Board's (Regional Board) Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) are issued pursuant to requirements of the federal Water Pollution Control Act (Clean Water Act). The SWRCB's Water Rights Decision 1641 (D-1641) and Water Rights Orders 90-05, 91-01, 91-03 and 92-02 implement the Bay-Delta Plan and Basin Plan as terms and conditions in Reclamation's CVP water rights. The BiOp's and RPA's are predicated on compliance with Delta water quality and flow criteria and with Sacramento River temperature criteria contained in the SWRCB's D-1641 and Water Rights Orders. The SWRCB's Water Rights Decision 1485 (D-1485) established Delta water quality and flow standards applicable to the SWP/CVP between 1978 and 1994. Those standards were violated 61 times in 1979 and 319 times between 1988 and 1994. [Footnote 10: Exhibit DWR-401, Bay-Delta Objectives Exceedance Metrics (Joint SWP/CVP responsibility), presented during the WaterFix Hearing. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/dwr_401.pdf]. The violations cited only involve standards for which both the SWP and CVP are jointly responsible for and exclude violations applicable to only one project, e.g. Vernalis standards. D-1641 established Delta water quality standards applicable to the SWP and CVP. Between 1995 and 2015, standards were	Please see Master Response 1, Responses to General Comments, regarding the SWRCB's updates to the Bay-Delta Water Quality Control Plan. Please see Master Response 4, Alternatives Formulation, regarding the inclusion of Alternative 4 in the EIS analysis. If the SWRCB adopts new standards Reclamation will address as appropriate.

Ltr#	Cmt#	Comment	Response
		violated 1,886 times, and violations occurred in 15 of the 20 years [Footnote 11: Exhibit DWR-402, Bay-Delta Objectives Exceedance Metrics (Joint SWP/CVP responsibility), presented during the WaterFix Hearing. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/petitioners_exhibit/dwr/dwr_402.pdf]. The SWRCB never issued enforcement actions for these violations. The DEIS acknowledges that electrical conductivity (EC) and chloride levels would be "significantly higher" under all of the action alternatives than under the No Action Alternative [Footnote 12: DEIS, pp. 5-7 and [PFD page] 5-8/137 and 138]. Additionally, the DEIS briefly mentions that the SWRCB adopted Bay-Delta Plan amendments for San Joaquin River flow and southern Delta salinity on December 12, 2018, but dismisses the new water quality and flow standards because the SWRCB has not yet implemented them into water rights permits [Footnote 13: DEIS, p. 2-2/[PFD page] 32.]. However, the SWRCB will implement the new standards within the likely life of the proposed project. Both the Central Valley Project Improvement Act (CVPIA) and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. The DEIS includes no alternative than analyzes or explains how the proposed operations will comply with the new Bay-Delta instream flow standards for the Stanislaus River instead of reducing flows as envisioned in the DEIS's Preferred Alternative.	
43	13	The SWRCB has been developing new Bay-Delta standards for the Sacramento River, eastside tributaries and western Delta. Based upon the documents generated in the proceeding so far, it is likely that the new standards will require increased Delta inflow and outflow to the Bay. For example, the Final Scientific Basis Report for the Sacramento River watershed and Delta components of the update states: "The best available science, however, indicates that these requirements [D-1641 and the biological opinions] are insufficient to protect fish and wildlife" [Footnote 14: SWRCB, Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows, Final 2017, p. 1-5. https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf]. The July 2018 Framework for the Sacramento/Delta Update to the Bay- Delta Plan envisions increased Delta outflow and reductions in water supply [Footnote 15: SWRCB,	Please see Master Response 4, Alternatives Formulation, for additional discussion of Reclamation's range of alternatives. Please see response to comment 43-12.

Ltr#	Cmt#	Comment	Response
		July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, pp. 13, 15, 19. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf]. The DEIS fails to even acknowledge or discuss the potential consequences of new standards or include an alternative consistent with the flows and operations identified in the Final Scientific Basis Report or the 2018 Framework. The SWP/CVP has never complied with the narrative salmon protection standard in Table 3 of the SWRCB's Bay-Delta Plan. The objective states, "Water quality conditions shall be maintained together with other measures in the watershed, sufficient to achieve a doubling of natural production of chinook salmon from the average production of 1967-1991, consistent with the provision of State and federal law" [Footnote 16: Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, December 12, 2018, p. 14. https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf]. This salmon doubling provision is also mandated in the CVPIA and the California Fish and Game Code. As we previously discussed, natural production of Chinook salmon has significantly declined not increased since 1967-1991. Because the SWRCB had failed to adopt protective water quality standards for the Delta, the U.S. Environmental Protection Agency (EPA) promulgated water quality standards in January 1995. The standards, at 40 CFR 131.37, established a fish migration criterion to double salmon populations based on salmon smolt survival index of number of tagged fall-run smolts released upstream on the Sacramento and San Joaquin Rivers and recaptured at Chipps Island in the western Delta. An estuarine habitat criterion was included to protect fish and wildlife in the Suisun, San Pablo and San Francisco bays and Suisun Marsh, and stringent specific salinity requirements were set to protect striped bass spawning in the San Joaquin River. These officially adopted and current federal water quality standards are applicable to California but have never been acknowledged or complied with by the CVP/SWP. They are not identified, discussed or analyzed in the DEIS [Footnote 17: Electronic Code of Federal Regulations (e-CFR), 131.37, current as of 27 August 2019. https://ecfr.io/Title-40/pt40.24.131#se40.24.131_137 Federal Register, EPA, 10 CFR Part 131, January 24, 1995. https://www.govinfo.gov/content/pkg/FR-1995-01-24/pdf/95-817.pdf].	

Ltr#	Cmt#	Comment	Response
43	14	The DEIS fails to disclose the pattern and practice of waiving or relaxing water quality standards. The SWRCB has succumbed to a pattern and practice of waiving (i.e., weakening) water quality, flow and temperature criteria whenever requested in Temporary Urgency Change Petitions (TUCP's). Prior to 1991, the SWRCB simply didn't enforce violations of water quality standards. In 1992, BOR and DWR intended to submit a TUCP, but CDFW wouldn't agree to approval; the SWRCB chose not to take enforcement action for some 218 violations [Footnote 18: SWRCB letter to USBR and DWR regarding D-1485 water quality violations, June 1992, pp. 1-2 and 4. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/cspa_252.pdf]. In June of 1992, the SWRCB relaxed D-1485 Suisun Marsh salinity and Contra Costa Canal chloride standards [Footnote 19: Order 92-02, Order Establishing Drought-Related Requirements for the Bay-Delta During 1992, p. 30-32. https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1992/wro92-02.pdf]. The SWRCB conducted a February 2009 hearing on a DWR/BOR petition to relax Delta water quality standards, but miracle March rains made relaxation unnecessary [Footnote 20: Order WR 2009-0013-EXEC, Order Denying Temporary Urgency Change, February 24, 2009, p. 6. https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2009/wro2009_0013.pdf]. In 2013, the SWRCB allowed BOR/DWR to operate to critical year water quality standards in a dry year, effectively weakening the standards [Footnote 21: Letter from SWRCB Executive Director Tom Howard to Ronald Milligan and David Roose, Actions to Conserve Cold Water Pool in Shasta Reservoir for Fishery Resources, May 29, 2013, p. 3. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/05292013swrcb.pdf]. In 2014 and 2015, the SWRCB weakened water quality, flow and/or temperature criteria some 35 times [Footnote 22: Pubic Policy Institute of California, What if California's Drought Continues? August 2015, page 7: http://www.ppic.org/content/pubs/report/R_815EHR.pdf and the Technical Appendix at page 6: http://www.ppic.org/content/pubs/other/815EHR_appendix.pdf]. Between January 2014 and December 2015, the SWRCB issued a series of fourteen orders largely granting TUCPs submitted by BOR and DWR for the Delta and San Joaquin River [Footnote 23: State Water Project and Central Valley Project	Reclamation operates the CVP consistent with applicable state and Federal laws, including the terms and conditions of its water rights permits and licenses. When appropriate, Reclamation has applied for Temporary Change Petitions consistent with applicable state law. The authority to grant Temporary Urgency Change Petitions rests with the State Water Resources Control Board, and analysis of SWRCB actions is beyond the scope of this EIS. Please see Appendix G, Water Quality Technical Appendix, for additional information regarding water quality standards.

Ltr#	Cmt#	Comment	Response
		Temporary Urgency Change Petition page, 2015 and 2015. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/]. In 2014, SWRCB staff observed that the TUCP orders reduced regulatory Delta outflow by 43% and increased Delta exports by 18%. In 2015, SWRCB actions reduced regulatory outflow by 78% in order to increase exports by 32%. These changes shifted more than one million acre-feet of water from fisheries protection to agricultural and urban use [Footnote 24: SWRCB, staff presentation at the 20 May 2015 public workshop on drought activities in the Bay-Delta: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/workshops/swrcb_staff_pres_session1b.pdf]. The long history of BOR's violations of water quality standards is ignored in the DEIS. In fact, the word "violations" only appears a single time in a reference to program-level effects on water utilized by a federally recognized Indian tribe, where it concludes that, "adverse effects on water quality and violations to water quality standard are not expected…" Ignoring the long history of TUCP's and water quality standards fails to comply with NEPA's requirements for fair disclosure and requirement to accurately describe the environmental setting. The DEIS fails to acknowledge, discuss or analyze the pattern and practice of serially weakening legally promulgated water quality and flow standards established to protect fish and water quality. It further fails to incorporate the serial failure to comply with water quality and flow standards in its modeling and assessment of the project's ability to deliver water and evaluation of alternatives. Consequently, the DEIS is deficient as a NEPA document.	
43	15	CSPA [California Sportfishing Protection Alliance] submitted and presented numerous comments, objections, protests, petitions for reconsideration and complaints throughout 2013-2015 proceedings before the SWRCB. For example, the CSPA et al. Protest, Objection, Petition for Reconsideration of the February 3, 2015 TUCP Order discussed the results of the previous year's TUCP orders, past and future impacts and consequences to fisheries, mismanagement of water project operations and likely results of future TUCPs [Footnote 25: CSPA et al., Protest, Objection, Petition for Reconsideration, February 3, 2015 TUCP Order, 13 February 2015, pp. 3-31. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_shutes021315.pdf]. Attachments 1and 2 to that Protest detailed the continuing declines of Delta smelt in 2013 and 2014 under	Please see response to comment 43-14. Actions that occurred prior to the proposed action are reflected in the discussion of the existing conditions and the No Action Alternative including the status of Delta Smelt, etc.

Ltr#	Cmt#	Comment	Response
		D-1641 and how CVP/SWP operations exacerbated the decline [Footnote 26: Cannon, T., Summer 2013, The demise of Delta smelt under D-1641 Water Quality Standards, pp. 2-19. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att1.pdf Cannon, T., Summer 2014, Demise of the Delta Smelt Population, pp. 2-43. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att2.pdf]. Attachment 4 detailed how excessive water deliveries to Sacramento River Settlement Contractors exhausted the cold-water pool behind Shasta Dam in late August 2014 leading to a lethal increase in Keswick temperature releases in September [Footnote 27: CSPA, Demise of Winter Run in Summer 2014 pp. 1-3. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att4.pdf]. Attachment 5 detailed how Delta smelt had declined to an all-time low and that, contrary to USBR/DWR, Delta smelt are in the Delta during June and July [Footnote 28: CSPA, Delta Smelt on the Scaffold, pp. 1-3 and 7-24. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att5.pdf]. Attachment 6 detailed how multi-year drought sequences occur 40% of the time in the Central Valley and that water project operators supply all water possible during the initial year(s) of a drought on the gamble that the next year will be normal [Footnote 29: CSPA, Workshop presentation February 18-19, 2014. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_att6.pdf]. As another example, CSPA submitted a June 17, 2015 Protest, Objection, Petition for Hearing in response to a June 2015 notice regarding a BOR/DWR TUCP; this protest discussed the status of fisheries, consequences of previous TUC Orders, and how excessive water deliveries during initial drought years eliminated BOR/DWR's ability to meet water quality and flow standards [Footnote 30: CSPA et al., Protest, Objection, Petition for Hearing of June 8 notice of TUCP by DWR and BOR, pp. 3-10, 12-14, 15-20, June 17, 2015. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_billjennings061715.pdf]. CSPA also filed a July 21, 2015 formal complaint against the SWRCB, USBR and DWR for violations of Bay-Delta Plan, D-1641, Clean Water Act, Endangered Species Act, Public Trust Doctrine and the California Constitution. The complaint pointed out the pattern and practice of delivering near-normal water supplies in the early years	

Ltr#	Cmt#	Comment	Response
		of drought, depleting carryover storage, and then relying on the SWRCB to weaken water quality standards. Another formal complaint was filed by CSPA on August 2, 2015 against the SWRCB and BOR for violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution [Footnote 31: CSPA, Complaint Against SWRCB and USBR for Violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution, pp. 2-19, August 22015. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_complaint080315.pdf]. The Complaint detailed the collapse of Sacramento River fisheries, compression of spawning habitat, explicit violations of Basin Plan and WR Order 90-05 requirements, failure to comply with BiOp RPA [Reasonable and Prudent Alternative]'s, and the inability of the Sacramento River Temperature Task Group to meaningfully protect fisheries given the BOR's intransigent commitment to excessive water deliveries. Attached to this comment letter is a list, with links, of the numerous comments, presentations, objections, protests, petitions for reconsideration and complaints CSPA submitted to the SWRCB in 2014 and 2015 [ATT1]. Together, they present a very different reality than the one portrayed by the DEIS. The DEIS is little more than an omelet of distortion and half-truth designed to support a predetermined course of action. Consequently, decision-makers are deprived of the information necessary to reach an informed decision. The DEIS must be revised to accurately reflect the history of BOR's repeated petitions for TUC orders and the consequences to fisheries as a result of approved TUCP orders.	
43	16	The DEIS mentions drought(s) 24 times, although the appendix on water quality also evaluates drought impacts on water quality constituents. However, there is no discussion of the frequency of drought and its effects water storage and supply or the fact that future droughts are likely to become more extreme. Over the last 100 years, there have been 10 multi-year droughts of large-scale extent in California spanning more than 40% of the time. These include the 1918-1920, 1923-1926, 1928-1935, 1947-1950, 1959-1962, 1976-1977, 1987-1992, 2000-2002, 2007-2009 and 2012-2015 droughts [Footnote 32: Drought in California, DWR, p. 4. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/cspa_251.pdf]. Drought is normal in California's Mediterranean climate. Anthropogenic warming has substantially increased the overall likelihood of extreme	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources for a discussion on how drought periods and consecutive dry years were incorporated into the modeling. Appendix H, Water Supply Technical Appendix, of the EIS conducts an impact assessment that considers changes in water supply conditions related to changes in CVP and SWP operations under the alternatives as compared to the No Action Alternative. It uses the CalSim II model to simulate operation of CVP and SWP over a range of different hydrologic conditions, and applies a set of operating rules to address extreme hydrologic conditions where there is not enough water supply to meet water deliveries.

Ltr#	Cmt#	Comment	Response
		California droughts [Footnote 33: Williams et al., 2015, Contribution of Anthropogenic warming to California drought during 2012-2014. https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015GL064924]. BOR must recirculate the DEIS and include within it description of the frequency and extent of drought, and the likelihood that drought will become the "normal" in California. It must fully discuss and analyze what percentage of water supply commitments can be met while protecting an already degraded ecosystem and complying with water quality and flow standards.	Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS and Appendix F, Attachment 2, for additional climate change modeling.
43	17	The DEIS contains a single section entitled "Drought and Dry Year Actions" that comprises three short paragraphs [Footnote 34: DEIS, p. 3-42/[PFD Page] 76]. Identified actions include development of a voluntary toolkit, a meet-and-confer with fish agencies and Sacramento River Settlement Contractors in the event of a dry or critical water year on possible voluntary actions and, should dry conditions continue, potentially developing a drought contingency plan (that may include actions from the toolkit) for the water year. There is no mention of TUCP's [Temporary Urgent Change Petition] or waivers of water quality standards in the DEIS. The Biological Assessment for California WaterFix was more honest in that it anticipated creation of a drought management team that would create a drought contingency plan. Measures could include adhering to existing regulatory authorizations or proposing other drought response actions [Footnote 35: Biological Assessment for California WaterFix, Chapter 3, Description of the Proposed Action, 3.7.2 Proposed Future Drought Procedures, p. 3-222. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit104/docs/Ch_3_Proposed_Action_RevisedDraftBA.pdf]. Previously, BOR and DWR have routinely submitted TUCP's in drought situations rather than undertake a serious effort to restrict deliveries in order to meet water quality requirements. There is nothing to indicate that this is no longer the situation. There has never been a public process to evaluate what reduction in water deliveries would enable BOR to meet water quality standards. Increased water deliveries and reduction of Delta outflow are likely to exacerbate existing conditions. BOR must recirculate the DEIS and include within it a candid discussion and analysis of the likelihood of BOR/DWR resorting to TUCP's and whether they will first operate to meet water quality standards before delivering water to contractors.	Please see response to comment 43-16. The current proposed course of action in drought and dry years is as described throughout the EIS.

Ltr#	Cmt#	Comment	Response
43	18	The DEIS fails to disclose that Basin Plan and SWRCB Order 90-05 are predicated upon controllable factors and that water deliveries are controllable factors. The Regional Board's Basin Plan for the Sacramento River Basin and the San Joaquin River Basin has long included water quality standards for temperature. For the Sacramento River, "[t]he temperature shall not be elevated above 56ºF in the reach from Keswick Dam to Hamilton City nor above 68ºF in the reach from Hamilton City to the I street Bridge during periods when temperature increases will be detrimental to the fishery." [Footnote 36: Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region, Fifth Edition Revised May 2018, Sacramento River Basin and San Joaquin River Basin, p. 3-14. https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf]. Temperature standards are dependent upon controllable factors, i.e., resulting from and controllable by human activity [Footnote 37: Id, at 3-2.]. Constructing dams and storing, releasing and diverting water are obviously human activities. In 1990, the SWRCB issued WR Order 90-05 that implemented the Basin Plan with respect to BOR's water rights in the Sacramento River at Red Bluff Diversion Dam. The Order requires BOR to meet a daily average water temperature of 56ºF in the Sacramento River at Red Bluff Diversion Dam and that, during periods of higher temperature beyond the reasonable control of BOR, the Permittee shall after consultation with fishery agencies designate an upstream location where compliance can be achieved. None of the "factors considered beyond the control of the Permittee" enumerated by the Order include the need to deliver water to contractors [Footnote 38: SWRCB Order 90-05, Order Setting Terms and Conditions for Fishery Protection and Setting a Schedule for Completion of Tasks, 2 May 1990, pp. 54-55. https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf]. The Order notes that Sacramento River temperature objectives are limited to "controllable factors" by BOR [Footnote 39: Id. at 6, 18, 48. https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf]. SWRCB WR Order 92-02 clarifies that timing and quantities of deliveries by BOR are controllable factors and that "…decisions on water deliveries are subject to the availability of water, and that water should not be considered available for delivery if it is needed as carryover to maintain an adequate cold water pool for the fishery." [Footnote 40: Order 92-	Reclamation wrote the EIS to evaluate alternatives as objectively and completely as possible and it includes compliance with applicable state and federal permits. In preparing the EIS, Reclamation has followed appropriate legal process and is complying with NEPA regulations. Please see Master Response 1, Responses to General Comments, regarding WR Order 90-05. Please also see Master Response 1 regarding the requirements for a supplemental EIS.

Ltr#	Cmt#	Comment	Response
		02, Order Establishing Drought-Related Requirements for the Bay-Delta During 1992, Footnote, p. 9. https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1992/wro92-02.pdf]. The DEIS blatantly misstates WR Order 90-05 by claiming the "The orders stated Reclamation shall operate Keswick and Shasta Dams and the Spring Creek Powerplant to meet a daily average temperature of 56 degrees Fahrenheit (ºF) as far downstream in the Sacramento River as practicable during when higher temperatures would be harmful to Winter-Run Chinook Salmon." [Footnote 41: DEIS, p. 3-4/[PFD Page] 38]. The DEIS erroneously claims that BOR is only required to meet downstream temperature requirements "as far as practicable" and ignores the fact that protective temperatures are also required for spring-run and fall-run Chinook salmon, as well as other species. It fails to include a discussion of controllable factors or acknowledge that controllable factors include water deliveries. In fact, the words "controllable factors" are not in the document. The DEIS also fails to acknowledge or discuss the extent of BOR water deliveries to Sacramento River contractors in drought years that reduced or eliminated BOR's ability to conserve the cold-water pool in Shasta to ensure that temperature standards could be met. During the extreme drought years of 2014-15, BOR delivered more than 1.3 MAF in 2014 and 1.2 MAF to Sacramento River Contractors [Footnote 42: CSPA, Attachment 5 [ATT5], BOR water deliveries to Sacramento Settlement Contractors and Tehama-Colusa Canal in 2014 and 2015.]. Excessive water deliveries led to depletion of the cold-water pool in Shasta Reservoir in 2014-15. Winter-run Chinook salmon egg-to-fry survival was only 5.6% in 2014 and 4.2% in 2015, far below the 18-year average [Footnote 43: NOAA Fisheries, presentation at SWRCB workshop, March 18, 2016, egg-to-fry survival, p. 8. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/nmfs_yip_03182016_ppt.pdf]. Nor does the DEIS discuss actual temperature compliance with WR Order 90-05. Examination of CDEC data from BOR's Red Bluff Diversion Dam station reveals that, regardless of water year or Shasta storage, BOR has never complied with the 56ºF temperature standard at Red Bluff between May 15 and September 30 since at least 1992 [Footnote 44: CSPA, Attachment 4 [ATT4], Red Bluff Dam Temperatures 2001-2019. Temperatures can easily be graphed by year and date range. The BOR Red Bluff Diversion Dam CDEC station can be found at:	

Ltr#	Cmt#	Comment	Response
		http://cdec.water.ca.gov/jspplot/jspPlotServlet.jsp?sensor_no=11866&end=&geom=small&interval=30&cookies=cdec01]. Failure to accurately discuss the relationship between controllable factors, water deliveries and their effects on cold-water storage and temperature compliance deprives the public and decision-makers of the information necessary to make informed decisions. It renders the DEIS as seriously deficient as a fair disclosure document. BOR must recirculate the DEIS and include within it the necessary information.	
43	19	The DEIS fails to disclose BOR’s failure to comply with Biological Opinion Reasonable and Prudent Alternatives. The 2009 NMFS BiOp does not require compliance with Basin Plan standards or even with WR Order 90-05 [Footnote 45: NMFS BiOp, p. 592.]. Action 1.2.1 (Performance Measures) of the BiOp’s RPA’s specifically requires a running ten-year average temperature compliance at Clear Creek (RM 292), Balls Ferry (RM 276), Jellys Ferry (RM 266) and Bend Bridge (RM 258) 95, 85, 40, 15 percent of the time, respectively. A review of compliance point temperatures over the recent 10-year period demonstrates that BOR has frequently failed to meet RPA temperature standards. According to the University of Washington website that is funded by USBR for Central Valley Project Improvement Act (CVPIA) and federal Endangered Species Act (ESA) purposes, the RPA Temperature Target Analysis and Exceedance shows that the ten-year (2009-2018) running average temperatures exceeded 56ºF at Balls Ferry, Jellys Ferry and Bend Bridge 89.9%, 100% and 100% of total days between 15 May and 30 September, respectively. Further, between 2009 and 2018, there were 56ºF daily average temperature exceedances at Clear Creek, Balls Ferry, Jellys Ferry and Bend Bridge in 30%, 90%, 100% and 100% of the years, respectively [Footnote 46: CSPA, Attachment 2 [ATT2], DEIS LTO CVP/SWP.]. The NMFS 2009 BiOp’s Reasonable and Prudent Actions require specific end-of-season storage requirements for Shasta Reservoir. Performance measures for end-of-September (EOS) include: 87 percent of years, minimum EOS storage of 2.2 MAF; 82 percent of years, minimum EOS storage of 2.2 MA and end-of-April storage of 3.8 MAF in following year (to maintain potential to meet Ball’s Ferry compliance point); and 40 percent of years minimum EOS storage of 3.2 MAF (to maintain potential to meet Jerry’s Ferry compliance point in the following year) [Footnote 47: NMFS BiOp, p. 592.]. However, over the most recent ten-year period, these storage requirements were met only 60%, 60%	Please see Master Response 2, Related Regulatory Processes, for information about this Draft EIS and its relationship to the previous biological opinions. Please see Master Response 1, Responses to General Comments, for information regarding the requirements for a supplemental EIS. Reclamation's request for reinitation letter on August 2, 2016 to NMFS stated that: "This request is based on new information related to multiple years of drought, recent data demonstrating extremely low listed-salmonid population levels for the endangered winter-run Chinook salmon, and new information available and expected to become available as a result of ongoing work through collaborative science processes." Reclamation also finds that various aspects of RPA Action Suite I.2 did not perform as designed during extended drought conditions. Alternative 1 includes a revised cold water pool management approach for Shasta to address this concern and focus cold water pool resources on the most critical time periods for the fish. The USFWS and NMFS both prepared Biological Opinions that concluded that Reclamation’s proposed action would not jeopardize listed species or adversely affect their critical habitat.

Ltr#	Cmt#	Comment	Response
		and 30%, respectively [Footnote 48: CSPA, Attachment 3 [ATT3], DEIS LTO CVP/SWP]. Failure to disclose BOR's noncompliance with BiOp RPA 1.2.1 deprives readers of information crucial to reaching informed conclusions about the Proposed Action. Accordingly, the DEIS must be revised and recirculated to meet NEPA's fair disclosure requirements.	
43	20	The DEIS fails to transparently disclose the role, limitations of authority and ineffectiveness of the Sacramento River Temperature Task Group. SWRCB WR Order 90-05 established BOR's responsibilities for meeting a 56ºF temperature standard at Red Bluff Diversion Dam for protection of fisheries. If conditions beyond the control of BOR would not enable meeting the standard at Red Bluff, it required BOR to consult with fish agencies to determine an upstream compliance point where the temperature criteria could be met. After consultations, BOR would develop and implement a temperature management plan, subject the approval of the SWRCB. The Sacramento River Temperature Task Group (SRTTG) is the multiagency group formed to advise BOR on temperature management and review proposed plans for temperature control. The almost 5,500-page DEIS contains only 11 brief references to the SRTTG. Those sections essentially state the purpose of the SRTTG and note that it reviews and comments on proposed management plans and works with BOR to develop strategies to protect fisheries. It is unclear if the temperature standard has ever been met at Red Bluff (RM 243); it certainly has not been met since 1991. It is clear that the temperature compliance point has been move further and further upstream. The default compliance point now seems to be Balls Ferry (RM 276), except in drought periods, when compliance points are established at Clear Creek (RM 292), or further upstream. During the recent drought, the temperature standard was modified and increased above 56ºF to levels non-protective of salmon spawning, egg incubation and emergence. The DEIS is silent on any potential responsibilities of the SRTTG other than its role as an advisory body. The SRTTG has no role in determining the quantity of water to be delivered to water contractors, the amount of higher temperature water from Whiskeytown Reservoir that will flow through the Spring Creek Powerhouse, or the timing of water released from Shasta Reservoir. Essentially, BOR tells the SRTTG how much water it will make available to meet temperature requirements, and the SRTTG then advises how best to use that water to protect fisheries.	Please see response to comment 43-19. As described in the EIS, Water Rights Orders 90-05 and 91-01 stated that Reclamation shall operate Keswick and Shasta Dams and the Spring Creek Powerplant to meet a daily average water temperature of 56 degrees Fahrenheit as far downstream in the Sacramento River as practicable during periods when higher temperature would be harmful to Winter-Run Chinook Salmon. Under the orders, the water temperature compliance point may be modified to an upstream location when the objective cannot be met at Red Bluff Pumping Plant. Early season deliveries, Trinity River water diversions to the Sacramento River, and peak power production from the Shasta Powerhouse are included in the existing analysis through modeling. They are not separately analyzed or discussed because there are no differences from the No Action Alternative in these operations. Actions to operate Shasta to manage water temperature are included in Alternative 1 and are described in Section 3.4.1 of the Main Body of the EIS. Reclamation recognizes that measures to protect salmon spawning, egg incubation and emergence were ineffective during the 2014 - 2015 drought. As stated in Appendix O, Section O.3.3.2 *Sacramento River*, of the EIS, "…high mortalities during recent extreme drought years and new analytical tools have demonstrated that a 56°F temperature limit does not sufficiently safeguard Winter-Run eggs and alevins (NMFS 2017, Martin et al. 2017; Anderson 2018). Based on analyses using … new analytical tools, the Alternative 1 operations would use a water temperature threshold of 53.5°F". This recognition of the need for more protective operations was a primary impetus for Reclamation to develop the more protective seasonal temperature management operations proposed for Alternative 1. The proposed temperature operations for May through October use the level of coldwater storage on May 1 to determine the optimal seasonal pattern of storage releases to maintain water temperatures as low as possible for as long as possible during the most

Ltr#	Cmt#	Comment	Response
		For example, in the SWRCB's approval of the June 25, 2015 Sacramento River Temperature Management Plan that increased the 56ºF temperature standard to a non-protective 57ºF, not to exceed 58ºF, at Clear Creek, SWRCB Executive Director Thomas Howard noted that the NMFS concurrence letter stated "that these conditions could have been largely prevented through upgraded in monitoring and modeling, and reduced Keswick releases in April and May" and that "the plan provides a reasonable possibility that there will be some juvenile winter-run survival this year." [Footnote 49: SWRCB, Letter from Thomas Howard to Ron Milligan, July 7, 2015, pp. 2-3. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/sacramento_river/docs/tmp_mgt_plan.pdf]. In fact, NMFS had admitted that "[i]t is now very clear through evaluating operations in both 2014 and 2015 that the volume of cold water available for real-time management in June through October is highly dependent on Keswick releases in April through early June." [Footnote 50: NMFS, Letter to BOR and DWR regarding the Contingency Plan for Water Year 2015, July 1, 2015, p. 4. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/stellejr_nmfs_070115.pdf]. However, BOR delivered Sacramento River Contractors 657,000, 631,512 and 835,444 acre-feet of water April-June in 2014, 2014 and 2016, respectively [Footnote 51: CSPA, Attachment 5 [ATT5], BOR water deliveries to Sacramento Settlement Contractors and Tehama-Colusa Canal in 2014-2016.]. When it comes to deliveries of water, BOR pays little heed to the SRTTG and seemingly to the SWRCB. Carryover storage and early season water deliveries largely determine how much cold water will be available later in the year. Additionally, BOR's policy of releasing water from Shasta Dam during the day for peak power production, rather than at night, increases the temperature of water released to the river. Water imported from the Trinity River via Whiskeytown Reservoir and the Spring Creek Powerhouse to supply water contractors can be six, seven or more degrees higher than water released from Shasta [Footnote 52: CSPA, Attachment 7 [ATT7], DEIS LTO CVP/SWP.]. All of these actions impact the volume of cold water remaining in Shasta Reservoir. A recirculated DEIS must discuss and analyze the impacts of early season deliveries, Trinity River water diversions to the Sacramento River, and peak power production from the Shasta Powerhouse on meeting temperature standards in the Sacramento River. It must also evaluate feasible mitigations for these impacts.	critical intervals of the winter-run spawning and incubation period (see Section 3.4.1 of the Main Body of the EIS).

Ltr#	Cmt#	Comment	Response
43	21	BOR's temperature management on the Sacramento River has failed to comply with Basin Plan's "controllable factors" requirements and with SWRCB Order 90-05, largely because of excessive water deliveries that have depleted carryover storage and the cold-water pool. BOR's temperature management has also failed to meet the storage and compliance point requirements in the 2009 BiOp RPA 1.2.1. And, as discussed below, the resulting consequences have been an increasing compression and reduction of Chinook salmon spawning habitat that have led to declines in successfully salmonid reproduction. There is nothing in the DEIS' discussion of proposed actions, alternatives or mitigation measures that would meaningfully improve BOR's Sacramento River temperature management efforts that is not already underway, and there is no discussion in the DEIS of actions that would improve the effectiveness of the SRTTG [Sacramento River Temperature Task Group]. The DEIS should have disclosed and discussed the failures of its temperature management and the limitations of authority of the SRTTG, and proposed and analyzed measures that would enable BOR to comply with the 2009 BiOp and Order 90-05. Such an analysis would require a candid assessment of the level and timing of reductions in water deliveries that would be necessary to increase carryover storage and retain cold water in Shasta Reservoir sufficient to meet temperature requirements for fish. Without such disclosure and analysis, the DEIS fails to comply with NEPA's requirements for fair disclosure and analysis and for evaluation of alternatives.	Please see response to comments 43-19 and 43-20 for responses to concerns about temperature compliance, compliance with RPA 1.2.1, and involvement of the Sacramento River Temperature Task Group. Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, for a discussion of the use of HEC5Q model and its utility for the purpose of this EIS. Please see Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of the analysis contained in the EIS.
43	22	The DEIS fails to disclose and analyze the loss of post-Shasta historical spawning habitat or evaluate mitigation for the loss of spawning habitat. Construction of Shasta Dam eliminated approximately 201 miles of historical habit and more than 90,000 Chinook salmon spawning sites. BOR's failure to meet Basin Plan temperature requirements at Hamilton City and SWRCB WR Order 90-05 temperature requirements at Red Bluff has compressed Chinook salmon spawning into a short river reach below Keswick Dam. Compaction of usable spawning habitat leads to superimposition of redds and other problems that adversely affect spawning success. As previously noted, the period since the construction of Shasta Dam corresponds with a dramatic decline of Sacramento River Chinook salmon. CDFW annual spawning surveys demonstrate that, between 1969 and 1985, an average of 37.6% of combined Chinook salmon species (late-fall run, winter-run, spring-run and fall-run) spawning occurred below Red Bluff (RM 243). However, between 1986 and 2009, average spawning below Red Bluff had	Please see Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS. Please see Master Response, 4, Project Description and Alternatives Development regarding the sufficiency of the alternatives evaluated. Please see Master Response 5, Adequacy of Analysis and Mitigation, for additional discussion related sufficiency of the analysis and mitigation. The commenter indicates that there has been a long-term upstream shift in the distribution of Chinook salmon spawning in the Sacramento River, attributable to increasing water temperatures that have reduced the thermally suitable spawning habitat area to the reach of the river nearest to Keswick Dam. The commenter argues that the temperature increases have resulted from the combination of a steady upstream shift of the Temperature Compliance Point (TCP) (typically 56oF) required by the regulating agencies and the frequent failure by Reclamation to meet the TCP in effect.

Ltr#	Cmt#	Comment	Response
		been reduced to only 17.2%. Between 2010 and 2017, average spawning had been further reduced to 10.6%. In 2016 and 2017, the numbers were 3.6% and 1.6%, respectively [Footnote 53: CSPA, Attachment 6 [ATT6], DEIS LTO CVP/SWP, pp. 1-3.]. With respect to listed species, an annual average of 14.5% of winter-run and 15.7% of spring-run Chinook salmon spawning occurred below Red Bluff before 1986, whereas only 2.1% of winter-run and 2.9% spring-run spawning occurred between 1986 and 2009. Since 2009, no winter-run or spring-run spawning has occurred below Red Bluff [Footnote 54: Id]. The aerial spawning surveys reveal that between 2005 and 2012, 78 to 99 percent of winter-run salmon, 51 to 88 percent of late-fall-run salmon, 30 to 43 percent of spring-run salmon and 7 to 34 percent of fall-run salmon have spawned in the upper 5.5 miles between the Highway 44 Bridge (RM 296.5) and Keswick Dam (RM 302) [Footnote 55: CSPA, Complaint Against SWRCB and USBR for Violations of Central Valley Basin Plan, WR Order 90-05, Clean Water Act, Endangered Species Act, Public Trust Doctrine and California Constitution, August 2 2015, pp. 5-7. https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/comments_tucp2015/docs/cspa_complaint080315.pdf]. In 2017, 88% of winter-run salmon and 50% of spring-run salmon spawned in the 2.5 miles between the Highway 44 Bridge and the ACID Dam (RM 299), and 100% of both species spawned in the 15 miles between the Airport Rd. Bridge (RM 284) and the ACID Dam [Footnote 56: CSPA, Attachment 6 [ATT6], DEIS LTO CVP/SWP, pp. 1-3; Douglas Killam, Salmonid Populations of the Upper Sacramento River Basin In 2017, USRBFP Technical Report No. 02-2018, Appendix Table A3 pp. 44-47. https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/CDFWUpperSacRiverBasinSalmonidMonitoring.aspx]. The Basin Plan protects 103 miles of identified spawning habitat between Keswick Dam (RM 302 and Hamilton City (RM 199). Essentially, 44 miles of spawning habitat between Hamilton City (RM 199) and Red Bluff (RM 243) has been severely degraded because of excessively elevated temperatures. Since the default temperature compliance point is most frequently established at Balls Ferry (RM 276), salmon spawning is increasingly compressed into the upper few miles below the ACID Dam (RM 299) and Keswick Dam (RM 302). Establishing the compliance point at Balls Ferry effectively degrades another 31 miles of historical spawning habitat between Red Bluff and Balls Ferry. Elimination of 75 miles or 73% of identified post-Shasta historical Chinook salmon spawning habitat protected by Basin Plan temperature standards is a	Reclamation acknowledges that the distribution of Chinook salmon spawning has been increasingly limited to the most upstream sections of the Sacramento River over the past few decades, and that the cause is likely an increase in river water temperatures. However, any increase in the temperatures is not necessarily the result of reservoir operations in Shasta and Keswick reservoirs. Climate change is likely a contributing factor (Reclamation 2016), but it is not possible at this time to determine how large a factor it is. It should be noted that the objective for Reclamation and the Sacramento River Temperature Task Group in shifting TCPs upstream has been to more reliably protect Chinook salmon eggs and alevins as the spawning habitat has shifted upstream (NMFS 2009).

Ltr#	Cmt#	Comment	Response
		significant contributing factor in the degraded condition of wild Sacramento River salmon. Location of the temperature compliance point at Clear Creek, as is done during droughts, eliminates another 16 miles of spawning habitat and results in a total reduction of 88% of post-Shasta identified spawning habitat. The DEIS' failure to disclose the extent of historical Chinook salmon spawning habitat in the Sacramento River and the increasing compaction of spawning, plus its failure to identify, discuss or analyze alternatives and/or mitigation measures that would expand and protect spawning habitat beyond a few miles below Keswick Dam, fails NEPA's requirements for fair disclosure, analysis, and selection of alternatives. The DEIS must be revised and recirculated.	
43	23	The DEIS fails to identify, discuss and analyze the Delta Reform Act, the 2010 CDFW Quantifiable Goals and Flows Report and the 2010 SWRCB Flow Report. Both the CVPIA and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. Increasing degradation of the Delta's water quality and fisheries led the California Legislature to adopt the 2009 Delta Reform Act [Footnote 57: California Legislative Information, Senate Bill No. 1, Chapter 5, (2009-2010) available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/cspa_26.pdf]. California Water Code (CWC), Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009), General Provisions, Sections 85000-85067 establishes a state water policy for the Delta. The Legislature found and declared that: The Sacramento-San Joaquin Delta watershed and California's water infrastructure are in crisis and existing Delta policies are not sustainable. Resolving the crisis requires fundamental reorganization of the state's management of Delta watershed resources. (§ 85001(a).) The Sacramento-San Joaquin Delta, referred to as the Delta in this division, is a critically important natural resource for California and the nation. It serves Californians concurrently as both the hub of the California water system and the most valuable estuary and wetland ecosystem on the west coast of North and South America. (§ 85002.) It established a policy of the State of California to: Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem. (§ 85020(c)) Promote water conservation, water use efficiency, and sustainable water use. (§ 85020(d))	Reclamation wrote the EIS to evaluate alternatives as objectively and completely as possible including compliance with applicable laws. In preparing the EIS, Reclamation has followed appropriate legal process and is complying with NEPA regulations. Please see Master Response 1, Responses to General Comments, regarding the 2009 Delta Reform Act and the State Water Board's process to update the Bay-Delta Water Quality Control Plan. Please also see Master Response 1, Responses to General Comments, for information regarding requirements for a supplemental EIS. Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives evaluated in the EIS.

Ltr#	Cmt#	Comment	Response
		Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta. (§85020(e).) It further found and declared: The policy of the State of California is to reduce reliance on the Delta in meeting California s future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. (c) The Delta is a distinct and valuable natural resource of vital and enduring interest to all the people and exists as a delicately balanced estuary and wetland ecosystem of hemispheric importance. (§ 85022(c)(1).) The permanent protection of the Delta s natural and scenic resources is the paramount concern to present and future residents of the state and nation. (§ 85022(c)(2).) The longstanding constitutional principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta. (§ 85023.) As previously stated, both the CVPIA and the Reclamation Act of 1902 require operation of the CVP in compliance with state law. The LTO Plan includes joint operation of the CVP and SWP. The DEIS fails to discuss or analyze the requirements of state law as mandated by the Delta Reform Act and relevant sections of the CWC. In fact, a brief reference to Delta Reform Act and implementing sections of the CWC only occur in Appendix Y, Cumulative Methodology, on page 5,456 of a 5,487 page DEIS. Appendix Y contains a summary of 171 past, present and reasonably foreseeable projects that may contribute to potential future impacts on the project. Projects were screened to determine if they could have an impact. The references to the Delta Reform Act/CWC were related to a brief description of the Delta Stewardship Council. Failure to consider state policy and law regarding the Delta renders the DEIS seriously deficient with respect to fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.	
43	24	CWC, Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009, Part 2, (Early Actions), Section 85084.5 required, The Department of Fish and Game, in consultation with the United States Fish and Wildlife Service and the National Marine Fisheries Service and based on the best available science, shall develop and recommend to the board Delta flow criteria and quantifiable biological objectives for aquatic and terrestrial species of concern dependent on the Delta. Following an extensive public proceeding including a peer-review process, CDFW issued a report titled Quantifiable Biological Objectives and Flow	Reclamation evaluated the report in responding to comments and concluded that it does not contain new information that requires modification of the Alternatives. Please Master Response 4, Alternatives Formulation, regarding the range of alternatives.

Ltr#	Cmt#	Comment	Response
		Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta [Footnote 58: California Department of Fish and Game, Quantifiable Biological Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent on the Delta, Nov. 23, 2010. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_66.pdf]. The report found that “recent Delta flows are insufficient to support native Delta fishes in habitats that now exist in the Delta” and recommended numerous biological and goals and objectives and specific recommendations for instream flow necessary to protect public trust fisheries. It also included the specific flow recommendations by the expert panel, fishery agencies and NGOs in the SWRCB’s 2010 flow hearing [Footnote 59: Id. at 94, 97-104, 105-107]. The DEIS fails to acknowledge, discuss or analyze the findings and recommendations in the legislatively-directed CDFW report. None of the alternatives in the DEIS incorporate the findings and recommendations in the report. Failure to consider the report and the scientific findings buttressing the report renders the DEIS deficient with respect to reasonable alternatives, fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.	
43	25	CWC, Division 35 (Sacramento-San Joaquin Delta Reform Act of 2009, Part 2, (Early Actions), Section 85086(c)(1) required The SWRCB to, “pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources. In carrying out this section, the board shall review existing water quality objectives and use the best available scientific information. The flow criteria for the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions. Section 85086(c)(2) also required that, Any order approving a change in the point of diversion of the State Water Project or the federal Central Valley Project from the southern Delta to a point on the Sacramento River shall include appropriate Delta flow criteria and shall be informed by the analysis conducted pursuant to this section. Pursuant to legislative direction, the SWRCB conducted an extensive public proceeding to determine flow criteria for the Delta necessary to public trust resources, using best available scientific information. The SWRCB’s proceeding to develop instream flows protective of public trust resources was the most intense and comprehensive effort to determine necessary flows to protect public trust fish and wildlife resources in the 52-year history of the	Please see response to comment 43-23. Please see Master Response 1, Responses to General Comments, for additional information on compliance with SWRCB Bay-Delta plan and the CVPIA.

Ltr#	Cmt#	Comment	Response
		Board. The Board appointed an illustrious group of recognized experts to serve as an expert and reference 325 technical documents. Twenty-four parties to the proceeding provided 84 expert witnesses and 488 exhibits, plus exhibits from previous Bay-Delta hearings [Footnote 60: SWRCB, Delta Flow Criteria Program website. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_25.pdf]. The resulting SWRCB report, titled Development of Flow Criteria for the Sacramento- San Joaquin Delta Ecosystem, found that "[t]he best available science suggests that current flows are insufficient to protect public trust resources" and that "recent Delta flows are insufficient to support native Delta fishes for today's habitats." It recommended flow criteria, crafted as percentages of unimpaired flows, of "75% of unimpaired Delta outflow from January through June, 75% of unimpaired Sacramento River inflow from November through June and 60% of unimpaired San Joaquin River inflow from February through June." [Footnote 61: SWRCB, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, 2009, p. 5. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_25.pdf]. The report also included the specific flow recommendations of an expert panel, fishery agencies, and NGO's in the hearing [Footnote 62: Id. at 153-177.]. The DEIS fails to acknowledge, discuss or analyze the findings and recommendations in the legislatively directed SWRCB Flow Criteria report. Nor do any of the alternatives in the DEIS incorporate the findings and recommendations in the report. Failure to consider the report and the scientific findings buttressing the report renders the DEIS deficient with respect to reasonable alternatives, fair disclosure and environmental setting. The DEIS must be revised and recirculated to address these shortcomings.	
43	26	Together, the legislatively mandated SWRCB and CDFW 2010 proceedings represent the most comprehensive and scientifically robust effort to determine necessary flows to protect fishery resources in a watershed in the state's history. The DEIS' failure to disclose, discuss and analyze declared state policy and CWC requirements or to discuss and include the findings and recommendations of the SWRCB and CDFW reports in a project alternative is inexplicable and fails to meet the fair disclosure requirements of NEPA. It effectively sabotages the selection of alternatives and any effects analysis. The DEIS must be revised and recirculated for additional public review.	Please see response to comment 43-23.

Ltr#	Cmt#	Comment	Response
43	27	The Alternatives in the DEIS are not sufficiently distinct and are not legally or factually defensible. Appendix D of the DEIS, Chapters 3 and 4, and especially Tables 3.2-1 and 4.1-1, describe the NEPA alternatives that the DEIS analyzes. These descriptions are difficult to follow and at times seem inconsistent [Footnote 63: For example, comparing also Appendix F, it is unclear what if any limits on exports Alternative 4 would apply based on flows in the San Joaquin River.]. Alternative 2 would simply strip out the RPA [Reasonable and Prudent Alternative]'s in the 2008 and 2009 Biological Opinions, leaving only those flow measures from D-1641 on which the USFWS and NMFS found jeopardy in 2008 and 2009 respectively. Since listed species in the Bay-Delta system have crashed across the board since 2009 even with the RPA's, it defies imagination how removal of the RPA protections could be warranted. Alternative 3 would also strip out the 2008 and 2009 RPA [Reasonable and Prudent Alternative]'s, but would seek to compensate for these flow measures with a combination of physical habitat improvements and "interventions" such as capturing wild juvenile salmon outmigrants in Dry and Critically Dry years and physically transporting them to the Delta or San Francisco Bay. Most of these habitat and intervention measures are described only programmatically [Footnote 64: See DEIS, Table 3.4-1.]. Many of them are already required or are already being implemented. Alternative 1, the Preferred Alternative, would combine the habitat and intervention elements of Alternative 3 with modified RPA's that would limit the implementation of the RPA's through outright change and/or through real-time management, allowing agency managers to reduce or waive RPA requirements in to-be-determined circumstances. As a general principle, managers would make real-time decisions about applying flow or diversion limits based for example on "risk-based OMR [Old and Middle River] management" [Footnote 65: DEIS, Appendix D, Table 4.1-1.] and "hedging" decisions on when to initiate or conclude protective measures for Sacramento River water temperature [Footnote 66: DEIS, Appendix D., p. D1-13/ [PDF Page] 304]. The DEIS describes Alternative 4 as: "Operate storage reservoirs differently in order to increase flows for fish, which would decrease Delta exports" [Footnote 67: DEIS, App. D, p. 3-7/[PDF Page] 190]. Alternative 4 would combine removal of some elements the existing RPA's [Footnote 68: The DEIS does not clearly define this.] with a requirement for year-round 55% of unimpaired flow	Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives and refinements made to Alternative 1. "Hedging" is not a term used in the EIS.

Ltr#	Cmt#	Comment	Response
		released into and through the Delta [Footnote 69: However, in modeling, BOR eliminates this requirement in about one third of all water years. It is also unclear whether in modeling BOR applied the 55% flow requirement to non-project facilities such as those on the Tuolumne, Merced and Yuba rivers.]. There are also a series of constraints specific to Alternative 4, such as a requirement for "Positive Old and Middle River flows from March through May." However, there are also less stringent requirements than existing requirements; for instance, there are no requirements for Shasta storage [Footnote 70: DEIS, Appendix D, Table 4.1-1.].	
43	28	Alternative 2 is insufficient to avoid take of Delta smelt and listed salmonids, will adversely affect critical habitat, and will not protect other public trust fishery resources consistent with applicable law. Alternative 2 would eliminate the protections in the RPA [Reasonable and Prudent Alternative]'s in the 2008 and 2009 Bi0ps, allowing water supply deliveries north of Delta and greater exports at state and federal facilities in the south Delta. Otherwise, Alternative 2 is largely the same as the No Action Alternative [Footnote 71: See DEIS Appendix D, Table 4.1-1. In some cases, Alternative 2 would also eliminate protections in addition to those in the RPA's.]. The DEIS states that implementation of Alternative 2 would increase water supply deliveries by an average of 655 thousand acre-feet (TAF) per year [Footnote 72: DEIS Table 5.11-1 (Municipal and Industrial water supply) and Table 5.11-4 (Agricultural water supply).].	A summary of Alternative 2 is provided in the EIS at Section 3.5, Alternative 2. The commenter is correct that this alternative does not include the RPA from the 2008/2009 biological opinions, which has the potential for negative effects relative to the No Action Alternative such as increased south Delta entrainment, as discussed in Chapter 5, Environmental Consequences, and specifically in Section 5.9, Aquatic Resources, for effects to fishes (e.g., see Section 5.9.1.7.6, Delta Smelt).
43	29	Elimination of OMR restrictions would result in illegal take of listed salmon and smelt and adversely modify their critical habitat. Prior to the Old and Middle River (OMR) restrictions in the RPA [Reasonable and Prudent Alternative]'s, salmon and smelt protections were generally limited to "take limits" in the form of salvage counts and to water quality standards that included export limits, Delta outflow requirements, and agricultural salinity standards in state water quality standards (in Water D-1641). When these standards proved ineffective in protecting the listed salmon and smelt [Footnote 73: Take limits became irrelevant as overall populations of smelt dropped to such low levels that the take limits were never reached.], the new biological opinions were issued, which added the OMR restrictions as well as other non-flow actions to preserve the species. Alternative 2 would eliminate the OMR protections in the RPA's, allowing greater exports at state and federal facilities in the south Delta.	The commenter provides an extensive summary of the requirements of the 2008-2009 biological opinions in terms of OMR restrictions. The commenter provides a reasonable summary of the main analyses in the EIS pertaining to south Delta entrainment risk, which generally noted the potential for entrainment risk to increase under the alternatives. However, the commenter does not raise additional issues, and no further response to the comment is needed.

Ltr#	Cmt#	Comment	Response
		The RPA's require limits on net negative flows in Old and Middle Rivers in the south Delta to protect listed winter-run and spring-run Chinook salmon, steelhead, and Delta smelt. Old and Middle River net flows are closely related to total south Delta exports. The OMR limits do not restrict higher exports when San Joaquin River inflows to the Delta are high and provide more positive net OMR. OMR limits allow restrictions on exports when Sacramento River inflows to the Delta are high and San Joaquin River flows are low. Without OMR limits (pre- 2009), exports were very high when Sacramento River flows were high. High OMR reverse flows and exports can draw salmon and smelt into the central and south Delta in the winter-spring period during high Sacramento River flows [Footnote 74: The Delta Cross Channel is closed during most of the winter-spring period, and under such conditions Sacramento River flows contribute minimally to lower San Joaquin River and OMR flows. San Joaquin salmon and steelhead smolts that enter the Delta via Georgiana and Three mile sloughs, and smelt living in or moving into the central Delta, are at risk to south Delta exports during the winter-spring period. Their presence in the central Delta or export salvage can trigger OMR restrictions that otherwise would not occur under the regular D-1641 export/inflow restrictions.]. Under the RPA's, the presence of listed species can trigger OMR restrictions to -5000 cfs or less negative. Whichever RPA is the most restrictive governs operations at any given time. The RPA's prescribe an elaborate review process and triggering criteria for a Smelt Working Group (SWG [Footnote 75: http://www.fws.gov/sfbaydelta/cvp-swp/smelt_working_group.cfm]) and Delta Salmon and Steelhead Group (DOSS [Footnote 76: http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html]) to make operations recommendations to Water Operations Management Team (WOMT), which may or may not adopt such recommendations. OMR flow management (Actions IV.2 and IV.3) is prescribed for the period January 1 to June 15 in the RPA in the NMFS Biological Opinion. The RPA describes the purpose of these requirements as follows: "Control the net negative flows toward the export pumps in Old and Middle rivers to reduce the likelihood that fish will be diverted from the San Joaquin or Sacramento River into the southern or central Delta. … Curtail exports when protected fish are observed near the export facilities to reduce mortality from entrainment and salvage" [Footnote 77: NMFS BiOp, p. 630.]. The USFWS's Biological Opinion prescribes similar measures to protect smelt:	

Ltr#	Cmt#	Comment	Response
		The objective of Component 1 is to reduce entrainment of pre-spawning adult delta smelt during December to March by controlling OMR flows during vulnerable periods [Footnote 78: FWS BiOp, p. 280]. … The objective [of Component 2] is to improve flow conditions in the Central and South Delta so that larval and juvenile delta smelt can successfully rear in the Central Delta and move downstream when appropriate [Footnote 79: Id., p. 282.]. The RPA's provide essential protection in the winter-spring period by limiting exports and reducing losses of salmon, steelhead, sturgeon, and smelt that would otherwise be drawn to the south Delta export pumps under the D-1641, notwithstanding D-1641's 65% export/inflow limit in December-January and 35% export/inflow limit in February-June. The OMR restrictions reduce entrainment of listed species into the central and south Delta in both dry and wet years, especially in December-January period. Even in drought years like winter-spring 2014-2015, OMR restrictions in winter reduced potential exports. Lack of prescriptions for December under the NMFS RPA did allow high negative OMR flows and exports in early December 2014. However, concerns for adult smelt led to voluntary reductions in exports and OMR negative flows in mid-December 2014 that subsequently were maintained through the winter. In recent drought years, the OMR restrictions in the RPA's have been more important than ever because D-1641 water quality standards have been weakened by the SWRCB, with the consent of NMFS and USFWS. See Section II(A)(2), supra. Chapter 5 of the DEIS admits that elimination of the RPA's governing OMR's and consequent permission to increase exports would have negative effects on ESA-listed smelt and salmon species and on key unlisted species such as fall-run Chinook. For example, the DEIS states: "Salvage and loss of juvenile Winter-Run Chinook have been shown to increase as exports increase"[Footnote 80: DEIS, p. 5-69/ [PDF Page] 269.]. "For San Joaquin River-origin Spring-Run Chinook Salmon, salvage, and thus entrainment, is likely to be higher with greater exports." [Footnote 81: Id.]. "Under action alternatives 1-3, exports increase during the migration window for juvenile Fall-Run Chinook Salmon whereas exports under Alternative 4 are similar to the No Action Alternative. Salvage and loss of juvenile Chinook Salmon has been shown increase as exports increase. … San Joaquin River-	

Ltr#	Cmt#	Comment	Response
		origin juvenile Fall-Run Chinook Salmon are likely to be entrained at the salvage facilities at higher rates under all action alternatives." [Footnote 82: DEIS, p. 5-70/ [PDF Page] 200.]. "Under all of the action alternatives, exports increase during the migration window for juvenile California Central Valley Steelhead. Salvage of steelhead has been shown to increase as exports increase." [Footnote 83: Id.] "Higher exports may increase entrainment risk [for green sturgeon] for Alternative 1-3." [Footnote 84: DEIS, p. 5-71/[PDF Page] 201.]. "Under Alternatives 2 and 3, seasonal operations to D-1641 criteria may appreciably increase entrainment risk." [Footnote 85: Id.]. It also admits: "greater OMR flow may reduce entrainment risk." [Footnote 86: Id.]. The DEIS argues that for Alternative 1 "increased flow in the Sacramento River mainstem during spring" are likely to offset most of these acknowledged increases in entrainment risk [Footnote 87: See pp. 5-69 to 5-71/ [PDF Page] 199-201. We analyze this assertion in discussing Alternative 1, below.]. However, Alternative 2 would require no increased Sacramento River mainstem flow increases.	
43	30	Elimination of Fall X2 requirements would result in illegal take of listed smelt and adversely modify their critical habitat. Alterative 2 would eliminate RPA [Reasonable and Prudent Alternative] 3, the Fall X2 requirement, from the 2008 Smelt Biological Opinion. This measure requires the release of water to maintain the low salinity zone in Suisun Bay during the fall of wet water years. Its purpose is to protect Delta smelt, whose production in spring and summer of wet water years is expected to be high. When this RPA was first triggered in 2011, the summer-to-fall Delta smelt survival greatly increased, and there was a sharp, better-than-expected increase in the Fall Index. This was the last case of such an increase in Delta smelt survival. In the two years Fall X2 was triggered, 2011 and 2017, production of longfin smelt was higher than expected, greatly helping the population of longfin smelt avoid the fate of Delta smelt. Elimination of this effective measure will allow Reclamation to maintain the low salinity zone upstream of Suisun Bay in the Delta, where the low salinity habitat will be more constricted and warmer than it would be in Suisun Bay.	The EIS acknowledges effects from Alternative 2 to Delta Smelt and Longfin Smelt; see Section O.3.5.8.1, Delta Smelt, and Section O.3.5.8.2, Longfin Smelt. Please see Master Response 4, Alternatives Formulation, for additional information on the range of alternatives.
43	31	Removal of the San Joaquin River Inflow to Export ratio and elimination of the Head of Old River Barrier would result in illegal take of listed steelhead and	The I:E ratio and HORB are considered as part of the No Action Alternative and the effects of the action alternatives on fall-run chinook salmon are disclosed as part of the effects analysis of Alternative 2 in the EIS.

Ltr#	Cmt#	Comment	Response
		adversely modify their critical habitat, and would adversely affect fall-run salmon. Alterative 2 would eliminate RPA Action IV.2.1, San Joaquin River Inflow to Export Ratio, the requirement from the 2009 NMFS Biological Opinion that limits CVP and SWP exports in the south Delta in April and May based on the flow in the lower San Joaquin River. This RPA [Reasonable and Prudent Alternative] was designed to protect steelhead from the San Joaquin River watershed from being entrained at the Delta pumps or simply misdirected in their outmigration from river to ocean. It also protects steelhead from the Mokelumne River, and fall-run salmon from the San Joaquin watershed and the Mokelumne River. Many salmonids from the San Joaquin and Mokelumne watersheds have their peak outmigration in April and May of each year. The DEIS acknowledges that entrainment of salmonids will increase with increased exports. However, in a bizarre twist of logic, the DEIS suggests that increased exports will increase outmigration success, noting: “Acoustic tagging studies indicate that when the Head of Old River Barrier is out, greater than 60% of fish that successfully migrate through the Delta have been salvaged at the TFCF and trucked to the western Delta (Buchanan et al. 2018).” [Footnote 88: DEIS, p. 5-70/ [PDF Page] 200. The DEIS makes a similar argument regarding steelhead on p. 5-71/201.]. Similarly, the Proposed Action would eliminate the Head of Old River Barrier (HORB). The DEIS argues: “With no Head of Old River Barrier, more tagged fish approach the South Delta export facilities, but survival to Delta exit does not appear to be influenced by export rates (Buchanan et al. 2018, SST 2017).” [Footnote 89: DEIS, p. 1-11/ [PDF Page] 29.] Here, Reclamation’s logic appears to be that since most salmonids do not survive to the ocean anyway, the Proposed Action can write off a measure that the DEIS acknowledges would reduce take (both from entrainment and from interfering with migration corridors) at a specific location. In failing to disclose the impacts of the elimination of the San Joaquin River Inflow to Export Ratio and the Head of Old River Barrier, the DEIS violates NEPA.	
43	32	Alternative 2 would eliminate NMFS RPA I.2.1-I.2.4 (Shasta Temperature Management). It would eliminate the 3250 minimum flow release requirement from Keswick Dam. There would be no minimum end-of-September Shasta storage requirement.	The effects of Alternative 2 are described in the EIS. Reclamation will comply with all applicable State and Federal laws.

Ltr#	Cmt#	Comment	Response
		The absence of water temperature management under the existing RPA's would make water temperatures downstream of Keswick Reservoir worse. In particular, this would adversely affect winter-run Chinook salmon and the temperature of their only currently reliable habitat. As shown most notably in the drought years when there was "almost total mortality" of winter-run juveniles in 2014 and "substantial mortality" in 2015, [Footnote 90: SWRCB, Water Rights Order 2015-043, pp. 10-11. Available at: https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2015/wro2015_0043.pdf] the RPA's already fail to protect winter-run Chinook salmon. It is unclear what compliance with Water Right Order 90-05 would look like in the absence of the NMFS RPA for Shasta Reservoir temperature management, but the SWRCB's enforcement of WRO 90-05 has been lax or non-existent, as described above. In addition, it is unclear that Reclamation intends to obey state laws regarding fishery protection going forward, as shown in statements by Reclamation officials to the SWRCB in 2018 meetings regarding the update of the Bay-Delta Plan and the Department of Interior's lawsuit against the state's adoption of lower San Joaquin River flow objectives as part of that update [Footnote 91: See Los Angeles Times, U.S. Sues California over River Flow Standards, March 28, 2019, available at https://www.latimes.com/local/lanow/la-me-water-flow-standards-lawsuit-20190328-story.html]. The elimination of the 3250 cfs minimum flow downstream of Shasta would allow indiscriminate redd dewatering and episodes of large-scale mortality of all life stages of salmonids. Even with the existing flow requirement, there have been large scale mortality events, particularly of fall-run salmon eggs and juveniles dewatered or stranded in dry years when Reclamation has dropped flows in the fall as irrigation demand dropped [Footnote 92: For examples, see "Fall Run Salmon Spawn 2018," Nov., 19, 2018, at http://calsport.org/fisheriesblog/?p=2389. See also "2007-2009 Salmon Crash Revisited," May 11, 2018, esp. Figure 4. Available at: http://calsport.org/fisheriesblog/?p=2130]. The lax Shasta Reservoir storage requirements have already led to situations where storage was insufficient to support a cold water pool in a subsequent dry year. Combined with the stated project purpose of maximizing water deliveries, the absence of any end of September or end of April storage requirement in Shasta would increase the likelihood of reckless water deliveries in disregard of fish protections in future years. The mass fish mortality in the Sacramento River downstream of Keswick Reservoir in 2014 and 2015 was in part a result	

Ltr#	Cmt#	Comment	Response
		of over-delivery of water from Shasta Reservoir in 2012 and 2013, when the RPA for Shasta storage was in place. It is clear that protection of listed and non-listed salmonids and sturgeon downstream of Shasta and Keswick reservoirs requires more stringent carryover storage requirements for Shasta Reservoir. Complete abandonment of Shasta storage requirements, as proposed in Alternative 2 and all other alternatives analyzed in the DEIS [Footnote 93: DEIS, Appendix D, Table 4.1-1.], is in itself sufficient to render all alternatives as non-compliant with the ESA, and thus, as unreasonable alternatives, deficient under NEPA.	
43	33	Elimination of existing water temperature protections for the American River downstream of Folsom Reservoir would result in illegal take of listed steelhead and adversely modify their critical habitat, as well as in increased mortality of fall-run Chinook salmon. The lower American River is widely acknowledged as temperature-impaired. Absent water temperature requirements for the lower American River, there were large-scale die-offs of fall-run Chinook salmon in 2001, 2002 and 2003 [Footnote 94: The American River's Hidden Fish Kill: 181,000 Salmon Die Before Spawning, available at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/auburn_dam/exhibits/cspa_1a.pdf]. These die-offs led to the adoption of the 2006 Flow Management Standard. The DEIS, Table 4.1-1 shows that the 2006 Flow Management Standard would govern operation of Folsom Reservoir and the lower American River. The DEIS characterizes that 2006 Flow Management Standard as setting “a flow and temperature regime.” [Footnote 95: DEIS, Appendix D, p. 4-28/ [PDF Page] 221.]. However, Table 4.1-1 in Appendix D of the DEIS also shows that Alternative 2 would require “no temperature thresholds” for the lower American River downstream of Folsom Reservoir. It thus appears that the intent for Alternative 2 is to limit application of the 2006 Flow Management Standard to the numeric flow requirements only, without the water temperature requirements. This would return to a situation that risks mass mortality, likely of listed steelhead as well as of salmon. Such elimination would violate the ESA, and render Alternative 2 an unreasonable and thus unlawful alternative under NEPA. Even if the table is inaccurate and the intent is to retain temperature thresholds for the lower American River, the lack of clarity on the issue violates the requirement under NEPA for clear disclosure. In addition, the lack of clarity is on this fundamental issue is	Effects to Fall-run Chinook Salmon and Steelhead in the American River were analyzed in the EIS. Please see Master Response 4, Alternatives Formulation regarding the range of reasonable alternatives and Master Response 2, Related Regulatory Processes, regarding the ESA process.

Ltr#	Cmt#	Comment	Response
		symptomatic of the fact that Alternative 2 is not a serious alternative, but rather a straw proposal.	
43	34	Reduction of flows in the Stanislaus River would result in illegal take of listed steelhead and adversely modify their critical habitat, as well as in reduced escapement of fall-run Chinook salmon. Under Alternative 2, the flow requirement for the lower Stanislaus River would revert to the 1987 flow agreement between the Bureau of Reclamation and the California Department of Fish and Game (now Wildlife). This would provide about half of the required flow that is currently required under NMFS Biological Opinion Actions III.1.2 and III.1.3 (commonly referred to as the 2E flows) [Footnote 96: See DEIS Appendix F, pp. 11/ [PDF Page] 16 (NAA) and 27-28/ [PDF Page] 32/33 (Alternative 2). Given that the application of water years types are different and appear more favorable to water supply under the 1987 requirement, some years under Alternative 2 would likely require less than half of the flow required under the No Action Alternative.]. The Department of Fish and Wildlife Grand Tab shows the Stanislaus River with escapement of fall-run Chinook since 2009 substantially greater than that in the Merced and Tuolumne rivers, where required flows are substantially less [Footnote 97: DFG Grand Tab, available at GrandTab - CA.gov]. Historically, the trout/steelhead fishery in the Stanislaus has been much more consistent than in the Tuolumne and Merced. The DEIS makes no showing that reduction of flows in the Stanislaus River by half would protect ESA-listed steelhead or fall-run Chinook.	The effects to Fall-run Chinook Salmon and Steelhead in the Stanislaus River under Alternative 2 are evaluated in the EIS.
43	35	Alternative 2 must be dismissed as an infeasible, unlawful alternative under NEPA because it would result in illegal take of listed species and adversely modify their critical habitat. Alternative 2 is not a valid alternative under NEPA because it would not comply with existing law. In the terms of the stated Purpose of the Proposed Action, it would not “address the status of listed species.” Alternative 2 is simply a straw man bookend for increasing water supply to make the Preferred Alternative (Alternative 1) appear as a compromise. A recirculated DEIS should eliminate the invalid Alternative 2 and analyze a suite of alternatives that that are sufficiently distinct from one another and that comply with the law.	Please see Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS. Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives.
43	36	Alternative 3 is vaguely defined and unclear, and provides no analysis to show that its measures would be sufficient to avoid the take of Delta smelt and listed	Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding the level of definition and analysis of alternatives.

Ltr#	Cmt#	Comment	Response
		salmonids and the adverse effects to their critical habitat that elimination of the RPA [Reasonable and Prudent Alternative]’s will cause. Alternative 3 would combine the flows in Alternative 2, Alterative 2’s elimination of RPA and other protections, and a suite of “habitat” and “intervention” actions that in concept would offset Alternative 2’s increased take of listed species and adverse modification of their critical habitat. Alternative 3 fails on several levels. First, most of the proposed mitigations in Alternative 3 lack sufficient definition to allow analysis. Some are wholly conceptual. Others are plans to study solutions. Absent definition, the effects of the measures in Alternative 3 on listed species and other resources are impossible to analyze. Second, even where Alternative 3 defines proposed measures, the DEIS makes no effort to quantify their benefits. The DEIS contains no analysis that shows that the measures proposed under Alternative 3 would be sufficient to mitigate the effects of proposed CVP and SWP operations on listed species and other resources. Third, some of the measures proposed under Alternative 3, such a predator reduction measures, are unproven as being effective. The habitat and intervention components of Alternative 3 are the same as those under Alternative 1 [Footnote 98: DEIS, p. 1-2/ [PDF Page] 20.]. Table 3.4-1 (Components of Alternative 1) shows which of the habitat and intervention components of Alternatives 1 (and 3) the DEIS analyzes at a Program level under NEPA. It is, in fact, almost all of them. Notably, the DEIS analyzes the following components on a program level, with few specific commitments: - Spawning and rearing habitat restoration (multiple rivers) - Small-screen program (multiple waters) - Winter-run conservation hatchery production - Adult rescue - Juvenile trap and haul - Drought temperature facility improvements (Folsom Reservoir) - Lower San Joaquin habitat - Predator hot spot removal - Temperature management study (Stanislaus River) - Sacramento Deepwater Ship Channel Food Study	

Ltr#	Cmt#	Comment	Response
		- North Delta Food Subsidies/Colusa Basin Drain Study - Suisun Marsh Roaring River Distribution System Food Subsidies Study - Delta Cross Channel Gate Improvements - Tracy Fish Facility Improvements - Skinner Fish Facility Improvements - Delta Fish Species Conservation Hatchery Under NEPA, it may in the future be necessary to do project-specific analysis for measures that are not yet defined to a degree sufficient to analyze the specific impacts of construction and implementation. However, this is not an excuse to have such a vague project description that the relative effect of the project component is unknown. Many of the components listed above are already-existing commitments that Reclamation hasn’t gotten done. The DEIS provides no analysis to show that the outcome of these commitments in the future will be any different than the partial accomplishment of these commitments has been in the past. For instance, the DEIS states: 4.3.6.10 Habitat Components DWR and Reclamation would continue to implement existing and ongoing restoration efforts that are underway but not complete, including: • Coordination with water users: Reclamation would coordinate with water users to remove predator hot spots in the Bay-Delta, which includes minimizing lighting at fish screens and bridges and possibly removing abandoned structures; and • Small Screen Program: Reclamation and DWR continue to work with existing authorities (Anadromous Fish Screen Program) to screen small diversions throughout Central Valley CVP and SWP streams and the Bay-Delta [Footnote 99: DEIS, Appendix D, p. D4-74/ [PDF Page] 267.]. Other components that the DEIS analyzes programmatically yet lists as “habitat” or “intervention” actions are planning processes, such as a “Delta Smelt Summer-Fall Habitat action,” itself a shopping list of potential actions [Footnote 100: DEIS, Appendix D, p. D4-73/ [PDF Page] 266.]. There is no reasonable way to quantify the effects of such actions based on these descriptions. Some of the actions are also far less robust than their labels might suggest. For example, the “Skinner Fish Facility Improvements” appear to business as usual:	

Ltr#	Cmt#	Comment	Response
		DWR would continue implementation of projects to reduce mortality of ESA-listed fish species. These measures that would be implemented include (1) electroshocking and relocating predators, (2) controlling aquatic weeds, (3) developing a fishing incentives or reward program for catching predators, and (4) operational changes when listed species are present [Footnote 101: DEIS, Appendix D, p. D4-76/ [PDF Page] 269.]. The planned "improvements" for the CVP's Tracy Fish Collection Facility are only slightly more substantive. The DEIS promises to continue three predator reduction elements at that location. Beyond that, "Several additional TFCF [Tracy Fish Collection Facility] activities to improve salvage efficiency will be considered through adaptive management." Despite the fact that CSPA and numerous other parties have been advocating for state of the art fish screening facilities at the CVP and SWP's south Delta diversion for decades, the DEIS promises no more than to "consider" them. The "juvenile trap and haul" element is equally vague, promising to install weirs at "key feasible locations." [Footnote 102: DEIS, Appendix D1, p. D1-118/ [PDF Page] 409.]. Several of the proposed components are explicitly studies: the Sacramento Deepwater Ship Channel Food Study, the North Delta Food Subsidies/Colusa Basin Drain Study, and the Suisun Marsh Roaring River Distribution System Food Subsidies Study. In short, the "habitat" and "intervention" actions of Alternative 3 are poorly defined or completely undefined, are plans to make plans, are existing actions often without proven results (such as predator reduction), and/or are contingent on future decisions. The DEIS makes no attempt to quantify their effects, makes no showing that they will actually be implemented, and makes no showing whatsoever that they will reliably protect listed species, specifically in the face of the elimination of RPA's and other existing protections. Thus, Alternative 3 fails under NEPA because it is inadequately defined and lacks an analysis to show that, in the terms of the stated Purpose of the Proposed Action, it would "address the status of listed species."	
43	37	Alternative 1 is insufficient to avoid take of Delta smelt and listed salmonids, will adversely affect critical habitat, and will not protect other public trust fishery resources consistent with applicable law. Alternative 1, the Preferred Alternative, combines the Habitat and Intervention components of Alternative 3 with a series of modifications to the existing RPA	Please see Master Response 4, Alternatives Formulation, regarding refinements to Alternative 1. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding the sufficiency of mitigation.

Ltr#	Cmt#	Comment	Response
		[Reasonable and Prudent Alternative]'s that generally reduce flows compared to existing requirements (No Action Alternative). In some cases, Alternative 1 would eliminate existing RPA's entirely (for instance, removal of the San Joaquin River Inflow to Export ratio and elimination of the Head of Old River Barrier), as in Alternative 2. In many cases, Alternative 1 retains the numeric requirements of the current RPA's, but would apply them more selectively. This selectivity is based on real-time monitoring that shows fish presence, total salvage to date at the south Delta fish collection facilities, and other conditions, such as storms. As a general matter, the DEIS proposes that weakening existing RPA protections will be mitigated by new measures, such as increasing habitat or increasing releases in some years from Shasta Reservoir into the Sacramento River. The DEIS offers no quantification of the ascribed mitigations. In addition, many proposed measures are open-ended and subject to further planning or evaluation, making quantification impossible.	
43	38	The Sacramento River measures in Alternative 1 would result in illegal take of listed salmon, steelhead and green sturgeon, and adversely modify their critical habitat, and would not protect fall-run salmon. The Preferred Alternative would eliminate the carryover storage targets in the current NMFS RPA [Reasonable and Prudent Alternative]'s for Sacramento River and Shasta Reservoir operations. This would subject listed species to take in subsequent years that were dry. The Preferred Alternative would replace other aspects of those RPA's with new requirements. These new requirements include: - Evaluation of modifications to or replacement of the temperature control device at Shasta Dam; however, implementation of such modifications are conditioned on a raise in dam height, [Footnote 103: DEIS, Appendix D1, p. D1-103/ [PDF Page] 395.] a raise that would be contrary to California law; - A process of "hedging" on temperature management in the Sacramento River downstream of Keswick Dam, trading benefits between different salmonid life stages for what would ostensibly be the greatest overall benefit [Footnote 104: DEIS, Appendix D1, p. D1-13/ [PDF Page] 304.]. - A requirement for spring pulse flows of "up to" 150 thousand acre-feet (TAF) in magnitude, dependent on May 1/April 1 storage in Shasta Reservoir. These measures will not protect listed species and their critical habitat.	Please see Master Response 4, Alternatives Formulation, regarding refinements to Alternative 1. "Hedging" is not a term used in the EIS.

Ltr#	Cmt#	Comment	Response
43	39	Elimination of the current NMFS RPA for carryover targets for Shasta storage, combined with the project purpose of "maximizing water deliveries," would cause take of listed species in dry years. The DEIS states that increasing pressure to deliver water is in direct conflict with environmental protection measures. This pressure has resulted in abandonment of carryover storage management to assure environmental protections and other uses over more than one year, except in the wettest water years: Prior to the passage of the CVPIA in 1992, Reclamation was able to function as a multiyear project. This means that end of year reservoir storages were higher to allow for carryover storage into the next year to help protect against a drought. However, since the passage of CVPIA, the projects have come under increasing pressure to provide water for environmental protections, which has resulted in decreased ability to allocate water to CVP contractors that then has resulted in additional pressure being applied to Reclamation from contractors to allocate additional water. As a result, the reservoirs are drawn down lower more frequently to meet the additional demands. The combined effect of these actions is that the CVP now operates primarily as an annual project. Only in the wettest years is Reclamation able to carry over supplies into the following year for drought protection [Footnote 105: Id.]. As discussed in Section III(A)(2) above, operation of the CVP as an "annual project" and the associated failure to use carryover storage for drought led to the mass mortality of juvenile winter-run salmon during the 2014 and 2015 drought years [Footnote 106: See DEIS, Appendix D1, p. D1-14/ [PDF Page] 305 for description of winter-run mortality in 2014 and 2015.]. The only habitat currently available to winter-run salmon, the reaches of the Sacramento River downstream of Keswick Reservoir, reached temperatures that were lethal to winter-run eggs and alevins. The DEIS further notes that NMFS, in 2017, determined that existing Shasta Reservoir storage targets were insufficient to protect fishery resources. On January 19, 2017, NMFS transmitted a proposed amendment to the 2011 amended RPA for Shasta Reservoir operations (RPA Action Suite I.2). The amendment included minimum storage targets between April 1 and May 31 between 3.5 MAF and 4.2 MAF, depending on water year type, and end of season storage between 1.9 MAF and 3.2 MAF, depending on water year type. Reclamation implemented a pilot program in 2017 for the draft amendment and modeled the draft amendment. The amendment's storage targets resulted in	Please see Master Response 4, Alternatives Formulation, regarding refinements to Alternative 1.

Ltr#	Cmt#	Comment	Response
		hundreds of thousands of acre-feet reduction in CVP water user deliveries [Footnote 107: DEIS, Appendix D1, p. D1-13/ [PDF Page] 304.]. As transmitted by NMFS in 2017 and acknowledged in the DEIS, management of carryover storage to protect listed species would require increases in carryover storage and reductions in water supply deliveries for Shasta Reservoir. However, faced with "conflicting objectives," the Preferred Alternative absolutely prioritizes water supply over measures to protect listed species: "The adaptive management plan may include operational changes to the timing and magnitude of releases from Shasta Dam for the benefit of anadromous fish, as long as there are no conflicts with current operational guidelines or adverse impacts to water supply reliability." [Footnote 108: DEIS, Appendix D1, p. D1-19/ [PDF Page] 310. Emphasis added.]. Elimination of the existing RPA carryover storage requirements in Shasta Reservoir, already identified by NMFS in 2017 as inadequate, would place winter-run salmon in the Sacramento River at even greater risk than under the No Action Alternative. The DEIS improperly includes the elimination of carryover storage requirements for Shasta Reservoir as component in the Preferred Alternative, and fails to disclose its impacts.	
43	40	The current Temperature Control Device at Shasta Reservoir causes take of winter-run salmon, but Alternative 1 would make modification or repair of the Device dependent on an illegal raise of Shasta Dam. The DEIS explicitly acknowledges that the existing Temperature Control Device (TCD) at Shasta Reservoir fails in conditions when storage in Shasta Reservoir is low: The current Shasta TCD leaks, and when reservoir levels are below the shutters does not allow for selective withdrawal from the reservoir. Additional flexibility to meet temperature control could be provided with structural modifications. Implementation of the Shasta Dam Raise project would replace or modify the TCD [Footnote 109: DEIS, Appendix D1-p. D1-103/ [PDF Page] 394.]. The DEIS does not explicitly say whether a raise of Shasta Dam is part of the Proposed Action. However, Table 3.4-1, Components of Alternative 1, identifies "Shasta TCD Improvements" as part of Alternative 1 that the DEIS analyzes programmatically. And all discussion in the DEIS of a specific remediation for the TCD is within the context of raising Shasta Dam:	Please see response to comment 43-7.

Ltr#	Cmt#	Comment	Response
		Depending upon the type of dam raise proposed, the TCD would be either modified or replaced by Reclamation. For relatively small raises of Shasta Dam, the existing TCD structure would be retrofitted to account for additional dam height, and to reduce leakage of warm water into the structure, but no new structure would be needed. However, modifications to, or replacement of, the existing structure are more likely to be necessary for increasingly higher dam raises [Footnote 110: DEIS, Appendix D1, p. D1-10/ [PDF Page] 395.]. However, elsewhere in the body of the DEIS, the DEIS proposes only that as part of the Proposed Action, Reclamation will "study" the problem: "Reclamation would study the feasibility of infrastructure improvements to enhance TCD performance, including reducing the leakage of warm water into the structure." [Footnote 111: DEIS, p. 3-23/ [PDF Page] 57.]. Clearly there is a major problem with the existing TCD that has already caused extensive mortality of listed species: Currently, the Shasta TCD does not function adequately when reservoir levels are below the TCD shutters. A hindcast report issued in March 2015 by Reclamation (Reclamation 2015a) found that the Sacramento River temperature model used to model temperatures and operate the TCD slide gate to manage the cold water pool adequately represented the performance of the Shasta TCD before the side-gate was operational. However, it did a poor job at characterizing the TCD performance once the TCD side gate operation went into real-time effect. These model errors led to an excess expenditure of Shasta cold water pool in the summer of 2014, resulting in early depletion of cold water reserves and loss of temperature control in the river in September 2014. The condition still exists and is proposed to be addressed during the Shasta Dam Raise project (Reclamation 2015a) [Footnote 112: DEIS, Appendix D1, p. D1-105/ [PDF Page] 396.]. The DEIS fails to disclose whether a Shasta Dam raise is part of the Proposed Action. In that context, it also fails to disclose that the California Attorney General and others are litigating to stop a Shasta Dam raise on grounds that it would violate state law [Footnote 113: People of the State of California v. Westlands Water District, Complaint for Injunctive Relief and Petition for Writ of Mandate, Case no. 19287, Shasta County Superior Court, filed May 13, 2019.]. This is clearly an issue of known controversy, an issue not raised as such in the DEIS. If in fact raising Shasta Dam is not part of the instant Proposed Action, the DEIS misleads the public by suggesting that the Proposed	

Ltr#	Cmt#	Comment	Response
		Action would actually implement improvements to the Shasta TCD that Reclamation would study.	
43	41	The process of "hedging" that the DEIS describes for Sacramento River operations would illegally prioritize water supply reliability over avoiding take of listed species. The DEIS describes "hedging" as follows: Reclamation's proposed action incorporates the concept of risk management, or what some refer to as "hedging": a small certain loss now to reduce larger future risks. Examples of this include intentionally releasing small floods to avoid large ones, or conserving some storage and causing some immediate shortage to avoid deeper drought. For reservoirs for which cold water limits meeting downstream temperature and flow goals, there is a set of months, seasons and years for which expected and available water supply render meeting downstream targets unachievable, another set for which meeting temperature targets requires careful planning, and another set for which incoming fish population size is too small to warrant water use for temperature management under extreme drought conditions (Adams, 2017) [Footnote 114: DEIS, Appendix D1, p. D1-15/ [PDF Page] 306.]. As described above, under existing conditions the Sacramento River Temperature Task Group has no role in determining the quantity of water to be delivered to water contractors, the amount of higher temperature water from Whiskeytown Reservoir that will flow through the Spring Creek Powerhouse, or the timing of water released from Shasta Reservoir. Essentially, BOR tells the SRTTG how much water it will make available to meet temperature requirements, and the SRTTG then advises how best to use that water to protect fisheries. The principle of "hedging" as described in the DEIS would take place completely within the limitations of the water allocation that Reclamation devotes to Sacramento River temperature management. If "expected and available water supply render[s] meeting downstream targets unachievable," the SRTTG must decide which aspect of environmental protection to sacrifice. These limitations by definition will adversely affect critical habitat for winter-run salmon. They will also likely affect critical habitat for other listed species, such as migration corridors for spring-run Chinook, steelhead and green sturgeon. These limitations will also create take of winter-run salmon, including adult, egg, alevin and likely juvenile life stages.	Reclamation delivers water in accordance with its water contracts. Reclamation's Alternative 1 includes a role for the SRTTG consistent with WRO 90-5 and is protective of listed species. Please refer to Appendix D for a description of Alternative 1. "Hedging" is not a term used in the EIS.

Ltr#	Cmt#	Comment	Response
		The DEIS does not disclose the impacts to listed species of the proposed process of “hedging.” Reclamation should correct this deficiency in a recirculated DEIS, and should also evaluate alternatives in which different water supply operations would better protect listed species and other public trust resources.	
43	42	Setting December 1 through end of February minimum flow releases from Keswick Reservoir as suggested in Alternative 1 could partially improve protection of fall-run Chinook redds and alevins in the Sacramento River, but the flow values are as yet not defined and would follow unknown flow requirements in October and November that Alternative 1 does not contemplate. In discussing fall and winter flows downstream of Keswick Reservoir, Alternative 1 contains an elaborate discussion of the tradeoffs between storage refill, cold water pool in the following year, different scenarios for wet and dry falls, stranding late winter-run redds, and stranding fall-run redds [Footnote 115: DEIS, p. 3-22/ [PDF Page] 56 ff.]. Appendix D, Table 4.1-1shows defined minimum flow releases from Keswick Reservoir from December 1 through February 1 consistent with Table 3.4-2 as being part of the Preferred Alternative, with minimum flows for this annual time period ranging from 3250 cfs to 5000 cfs depending on end-of-September storage in Shasta Reservoir. However, a careful read of the text of the DEIS shows that the flow values in Table 3.4-2 are “example” flows; Reclamation will determine actual flows in the future, based on myriad factors: Demands by the wildlife refuges, upstream CVP contractors, and the Sacramento River Settlement Contractors in October result in Keswick Dam releases that are generally not maintained throughout the winter due to needs to store water for beneficial uses the following year. These releases result in some early fall Chinook redds being dewatered at winter base flows. If, based on the above analysis, Reclamation determines releases need to be reduced to rebuild storage, targets for winter base flows (December 1 through the end of February) from Keswick Dam would be set in October based on Shasta Reservoir end-of-September storage. These targets would be set based on end-of-September storage and the current hydrology after accounting for Winter-run Chinook Salmon red stranding. Base flows would be set based on historical performance to accomplish improved refill capabilities for Shasta Reservoir to build coldwater pool for the following year. Table 3.4-2, Keswick Dam Example Release Schedule for End-of-September Storage, shows examples of	Please see response to comment 34-2. Flow values and initial operation descriptions are provided in the revised description of Alternative 1 in the EIS and Appendix D. Please see Section 3.4.1.4.1, Summer Cold Water Pool Management, for additional detail on temperature management. As stated in the revised description of Alternative 1 in the EIS, Table 3.4-2, Keswick Dam Example Release Schedule for End-of-September Storage, shows the initial schedule for Keswick Dam releases based on Shasta Reservoir storage condition; these would be refined through future modeling efforts as part of the seasonal operations planning.

Ltr#	Cmt#	Comment	Response
		possible Keswick Dam releases based on Shasta Reservoir storage condition; these would be refined through future modeling efforts as part of the seasonal operations planning [Footnote 116: DEIS, p. 3-22/ [PDF Page] 56.]. To understand the multiple contingencies and variables in this statement, it helps to call out each of its parts. First, Reclamation would determine in any given year whether flows from October need to be reduced to rebuild storage. Reviewing the hydrographs for Keswick releases from 2009 to 2018 [Exhibit 1], the answer would apparently always be that yes, flows need to be reduced: Except in years such as Water Year 2017 when there were flood releases in December through February, Reclamation has always reduced flow in this time period, particularly in January and February, to rebuild storage. So to start, Reclamation is likely to reduce flows from the “example” flow table in every year. It is not at all clear from the DEIS whether such reduction would occur at the beginning of the December-February time period, or whether Reclamation would reduce flow sometime within that time period (consistent with historical practice). Next, Reclamation would set flow targets based on end-of-September storage, current hydrology, and real-time observation of winter-run redds. These targets would, further, be based on “historical performance” for Shasta refill. And they would “be refined through future modeling efforts.” Any of these factors, or all of them in combination, could influence the minimum flow value set for December-February in any given year. To be clear, then, Table 3.4-2 does not show even the initial proposed December through February releases from Keswick Reservoir. It is an example of a schedule that Reclamation will define in the future based on a series of presently unquantified factors. As notable as the vagueness of what the DEIS does say about December through February releases from Keswick Reservoir under Alternative 1 is what the DEIS does not say about the Preferred Alternative’s fall and early winter Keswick releases. The Preferred Alternative does not specify any proposed flow release requirements from Keswick in November, even though the DEIS acknowledges that demands on Shasta storage decrease after October [Footnote 117: Id.]. The Preferred Alternative apparently does not even contemplate a process for determining November flows.	

Ltr#	Cmt#	Comment	Response
		The DEIS does not disclose how extending the water transfer window into October and November has the potential to cause flow fluctuations in the Sacramento River downstream of Keswick, regardless of the minimum flow. The DEIS does not analyze any constraints that might modify or avoid impacts to ESA-listed or non-listed salmon from such fluctuations. Because of its overly narrow statement of purpose, the Proposed Action does not consider alternative operations that would reduce impacts of flow reductions from October through February by reducing water supply deliveries either in the previous water year or in the subsequent water year. Review of Keswick releases in the hydrographs shown in the figure above [Exhibit 1] shows that requiring Reclamation to maintain minimum flow levels from December through February would be somewhat superior to historical practice in which Reclamation generally reduced releases from Keswick around the first of January. The Proposed Action thus identifies a real problem, but the proposed solution is utterly vague and contingent. It is not even clear whether Reclamation could reduce the established flows for December through February once they are set in any given year: "If the combined productivity of the remaining redds plus a conservative scenario for the following year is less than the productivity of maintaining releases, Reclamation would reduce releases to rebuild storage." [Footnote 118: Id.]. Reclamation should provide a clear description of proposed December-February flows downstream of Keswick Reservoir in a recirculated DEIS. Given the acknowledged drop in CVP water supply demands in November, Reclamation should also state how it proposes to address November flow requirements downstream of Keswick. The recirculated DEIS should include required flow values and the specific conditions under which Reclamation might seek to revise those values, either in any given year or in the long term.	
43	43	[Exhibit 1: Hydro Graph from USGS showing USGS 11370500 Sacramento R A Keswick CA]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
43	44	The DEIS fails to disclose that optimizing marketable hydropower through the Spring Creek power plant would adversely affect fish in the Sacramento River downstream of Keswick Reservoir. The DEIS describes operation of Spring Creek Powerhouse and generation from Shasta Dam under the Preferred Alternative as follows: "Under Alternative 1, Reclamation would operate the Shasta TCD to continue	"Optimizing marketable hydropower through the Spring Creek power plant" refers to release of storage for hydropower production during times when energy demand is greatest, and production is therefore most profitable. These times vary seasonally, but often refer to times of day when energy demand is greatest, such as hot summer afternoons when air conditioners are in high use. Storage release decisions to optimize marketable hydropower are often made in real-time. Because of their short-term variability, the effects on water

Ltr#	Cmt#	Comment	Response
		providing temperature management in accordance with CVPIA Section 3406(b)(6) while minimizing impacts on power generation" [Footnote 119: DEIS, p. 3-19/ [PDF Page] 53.]. Though "optimiz[ing] marketable power generation" is a project purpose, the DEIS does not describe the impacts that changes in power operations at Shasta Dam will have on water temperature and fishery resources downstream of Keswick Dam [Footnote 120: Equally, the DEIS does not analyze the impacts of "optimizing marketable power generation" at any other CVP and SWP reservoirs.]. Water temperature of water imported from the Trinity River via Whiskeytown Reservoir and the Spring Creek Powerhouse can be six, seven or more degrees higher than water released from Shasta. It is reasonable to assume that optimizing marketable power generation from Spring Creek and Shasta power facilities will change the timing and magnitude of power generation. Yet the DEIS makes no effort to describe the thermal or other impacts of such action. It is simply absent. Even if one assumed for the sake of argument that such changes would not violate applicable law, any increase in water temperatures stemming from power operations would create impacts in the Sacramento River downstream of Keswick Dam. The DEIS must be recirculated so that it discloses the impacts to water temperature of changes in power operations in the proposed new operation of the CVP and SWP.	temperatures in the Sacramento River of releases to optimize marketable power could not be modeled. However, given similar market conditions, optimal marketable hydropower will vary consistently with variations in flow through Spring Creek power plant and, therefore, the temperature modeling should provide reasonably accurate monthly average water temperature estimates. Refer to the EIS at Section 5.9.1.2, Sacramento River, and Appendix O, Section O.3.3, Alternative 1, for discussions of modeled monthly average water temperatures at Keswick Dam under Alternative 1 compared to the No Action Alternative. In summary, based on the HEC-5Q modeling, the mean monthly water temperatures at Keswick Dam are roughly equal under the No Action Alternative and Alternative 1, except for October of wet, above normal, and dry water years, which have 1.3 to 1.5°F lower mean water temperatures under Alternative 1 than under the No Action Alternative, and August of dry years, which has 1.0°F lower mean water temperature under Alternative 1 (see Table O.3-6 in Appendix O). These lowered water temperatures would benefit salmonid spawning and incubation. The largest predicted increase in mean monthly water temperature under Alternative 1 is 0.9°F for September of Above Normal water years. This increase occurs over a range well below the critical temperature threshold and is therefore less likely to have a large effect on the salmonids. Please see Master Response 7, Aquatic Resources, regarding comparison of modeled water temperature results to water temperature criteria and objectives.
43	45	The spring pulse flows proposed in Alternative 1 are insufficient and uncertain in quantity and timing. The Preferred Alternative proposes to release spring pulse flows in some cases: "Under Alternative 1, Reclamation would release spring pulse flows to help Spring-Run Chinook Salmon juvenile out-migration when the projected total May 1 Shasta Reservoir storage indicates a likelihood of sufficient coldwater to support summer coldwater pool management" [Footnote 121: DEIS, pp. 3-17 to 3-18/ [PDF Page] 51-52.]. The decision to release such pulse flows is entirely contingent on the Proposed Action's priority of water supply and power generation over protection of listed fish species and other fishery resources: "Reclamation would not make pulse flow releases during times that Shasta Reservoir is releasing flood flows or if the release would interfere with the ability to meet other anticipated demands on the reservoir" [Footnote 122: DEIS, p, 3-18/ [PDF Page] 52.].	Additional detail has been added to Section 3.4.1 of the EIS to describe the decision-making process for coldwater pool management for Tier 1. Reclamation would release spring pulse flows only when they would not negatively impact cold water pool and when they would have a biological benefit. Please see the National Marine Fisheries Service's Biological Opinion on Long-Term Operation of the CVP and SWP, Section 8.3.3.3, Spring Pulse Flows for additional information regarding the spring pulse flows.

Ltr#	Cmt#	Comment	Response
		The DEIS does not state a clear threshold at which Reclamation would decide to release pulse flows: "Reclamation thinks that this volume is about 4 MAF [Million Acre-Feet], which is used as a surrogate for planning and analysis" [Footnote 123: Id.]. Thus the DEIS promises benefits but does not make precise the conditions under which Reclamation will deliver the benefits.	
43	46	The DEIS does not make precise the quantity of water that the pulse flow or flows would release: "Reclamation could make a spring pulse release of up to 150 TAF [Thousand Acre-feet]…" [Footnote 124: Id.]. So, Reclamation "could" make a release. But it might not. And Reclamation could release "up to 150 TAF." In other words, Reclamation may make a pulse flow release of any amount greater than 0 AF up to 150 TAF. The DEIS makes no conditions, sideboards, or objective criteria for the size of the release. Consider the Shasta storage levels from the years 2009-2019 in the figure below [Exhibit 2], in combination with the previous figure of Keswick releases [Exhibit 1] that shows when there are flood releases, to evaluate when a Shasta spring pulse release "could" happen under the Preferred Alternative. In 2010, 2011, 2012, 2016, 2017 and 2018, there was sufficient storage in Shasta Reservoir to meet the 4 MAF threshold. Though not shown, there was also sufficient storage in 2019. In 2011, 2017 and 2019 there were flood releases in the spring; thus, those years do not qualify. Thus, out of the 11-year period 2009-2019, the spring pulse flow component could have had effect in 2010, 2012, 2016 and 2018. However, Figure 3.4-1suggests that a 90% exceedance forecast will be used to predict whether storage in Shasta Reservoir will be sufficient to make the spring pulse flow release. It is likely that in 2016 and 2018, and perhaps in 2012, the 90% forecasted exceedance figure for May 1 Shasta storage would have been less than 4 MAF [Million acre-feet] in March and April. So it is reasonable to assume that in 2016 and 2018, and probably in 2012, any spring pulse flow from Shasta Reservoir would have been either been less than 150 TAF [Thousand acre-feet], or would have been made entirely in May, or both. Thus it appears that compared to the baseline, the spring pulse flow provision of Alternative 1 would have likely had full effect in one year (2010) out of the 2009-2019 period. The Sacramento River downstream of major tributaries receives the benefits of natural flow pulses multiple times in most years. However, in many years, the upper primary salmon spawning reach of the Sacramento River directly	Spring pulse flows would be released in coordination with the Upper Sacramento Scheduling Team. Additional detail on current science (which may be updated through the Upper Sacramento Schedule Team) which further explains potential spring pulses has been added to Section 3.4.1.2, Spring Pulse Flows. Additionally, further description of the decision making process for spring pulse flows has been added to Section 3.4.1.2. Reclamation must maintain the flexibility to release less than 150 TAF in its spring pulse flows because it must maintain adequate coldwater storage to protect salmon spawning and incubation through the summer and early fall.

Ltr#	Cmt#	Comment	Response
		downstream of Keswick Dam gets few pulses from November through March, when releases from Shasta and Keswick are limited to flood releases. Flow often increases from Keswick as water deliveries occur begin in April and ramp up in May, but a large proportion of these releases is diverted before it reaches the Delta. An irregular, contingent, and modest spring pulse flow release such as that discussed in the DEIS as a component of Alternative 1 is not sufficient to mitigate the impacts of water storage operations in Shasta Reservoir. Salmon need flow pulses from Shasta/Keswick, especially in non-wet years, in the fall, winter, and spring. It is essential for wild and hatchery smolt survival to provide such releases and time them to coincide with natural pulses from downstream tributaries. The requirement for release in all months of 55% of the unimpaired flow at Shasta Reservoir, proposed as a component of Alternative 4, would help meet this aspec tof the need for pulse flows in fall, winter and spring. In sum, the spring pulse flows from Keswick Dam that the DEIS evaluates are too unclear and contingent to reasonably evaluate. They would apply in a very limited number of years. Reclamation should evaluate clear, specific, and enforceable options for pulse flow releases from Keswick Dam in a recirculated EIS.	
43	47	[Exhibit 2: Hydro graph showing: USGS 11370000 LK NR Redding CA]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
43	48	The elimination and/or modification of RPA [Reasonable and Prudent Alternative]'s for Delta operations will further devastate Delta fisheries. The DEIS summarizes the changes in Old and Middle River (OMR) flow management under the Preferred Alternative in this way: OMR reverse flow provides a surrogate indicator for how export pumping, inflow and the spring-neap tidal cycle influence hydrodynamics in the south Delta. Reverse OMR flow (negative values of OMR) indicates a net flow from the Sacramento River toward the export pumps. The RPAs in 2008/2009 BOs added OMR reverse flow criteria to protect listed fish species in the Delta from entrainment into channels that lead to the export pumps. Reclamation would proposed [sic] Real-Time OMR Protections for Delta Smelt and salmonids, including modifications to FWS BO Actions 2 and 3 along with NMFS BO IV.2.3 to incorporate real-time monitoring of fish distribution, hydrodynamic	The commenter quotes the EIS summary of the proposed OMR management for the preferred alternative. The commenter suggests that this would be 'devastating' in its impact to fisheries. The EIS acknowledges the potential for negative effects relative to the No Action Alternative, as described in Section 5.9, Aquatic Resources, and in Appendix O, Section O.3.3, Alternative 1 – Project-level Effects, and Section O.3.4, Alternative 1 – Program-level Effects; but it should be noted that neither the 2019 USFWS nor the 2019 NMFS recently issued biological opinions found the preferred alternative to jeopardize the existence of listed fishes (Delta Smelt, Winter-Run and Spring-Run Chinook Salmon, Steelhead, Green Sturgeon)..

Ltr#	Cmt#	Comment	Response
		models, and entrainment models into the decision support for the management of OMR, as follows: The Smelt Working Group (SWG) and Delta Operations for Salmon and Sturgeon (DOSS) would inform Reclamation when fish species have entered the portion of the Delta that is within the influence of the Pumping Plants. 1. At that time, Reclamation would conduct a risk assessment based on hydrodynamic models, entrainment models, and the monitoring of fish distribution to determine whether the pumps were at risk of entraining fish over the incidental take limit. 2. If Reclamation's risk assessment indicates low risk to the species, pumping would continue. If the risk assessment indicates high risk of exceeding the take limit, pumping would be reduced until the risk lowers. 3. Once 50% loss has been reached in a given year/season, Reclamation would begin operating to the density dependent triggers as identified in the 2009 NMFS BO, as amended [Footnote 125: DEIS, Appendix D1, p. D1-46/ [PDF Page] 337.]. This proposed revision to the OMR RPA's is at the center of the proposed changes in the Preferred Alternative, and would likely be its single most devastating component in its impact to fisheries.	
43	49	The elimination and/or modification of RPA [Reasonable and Prudent Alternative]'s for Delta operations will further devastate Delta smelt. At current levels of Delta smelt abundance, the risk to Delta smelt from CVP and SWP operations is always high. Abundance of Delta smelt is too low to base OMR implementation on monitoring or salvage, or some other "risk assessment." Even at higher abundance, larval smelt are too small to salvage and generally go undetected by monitoring. The previous RPA's assumed larval smelt to be present based on life-history timing. The Preferred Alternative would eliminate that basic level of protection. As noted above, Delta smelt are at an all-time low level of abundance. It is unfathomable that Reclamation is contemplating reducing protection for this species, unless the purpose is to drive the species to extinction. Real-time management by the Smelt Working Group has been ineffective [Footnote 126: See for example "April 20, 2015 Smelt Working Group" at http://calsport.org/fisheriesblog/?p=176. For the general condition of smelt in the last decade, see also Section II(A) above.]. Higher exports will affect Delta smelt generally and during flow pulses in the form of higher entrainment,	With respect to the commenter's suggestion that elimination/modification of reasonable and prudent alternative measures for Delta operations will "further devastate Delta smelt", the recently issued 2019 USFWS Biological Opinion found the preferred alternative to not jeopardize the existence of Delta Smelt nor to adversely modify Delta Smelt's critical habitat. The commenter suggests that Reclamation "is contemplating reducing protection" for Delta Smelt; this is inaccurate, because Reclamation is refining the management framework for Delta Smelt protection, which incorporates science learned over the past decade since implementation of the 2008 USFWS Biological Opinion. For example, it is anticipated that the proposed additional real-time OMR restrictions in response to first flush conditions—a period when adult Delta Smelt may be susceptible to south Delta entrainment during upstream spawning migration—may be triggered more often under the preferred alternative than under the 2008 Biological Opinion criteria (see pages 146-147 of the recently issued 2019 USFWS Biological Opinion).

Ltr#	Cmt#	Comment	Response
		reduced transport, misdirected flows, higher water temperatures, and poor food production. The nearly trivial and potentially detrimental habitat actions that the Smelt Working Group would have available to it under the Preferred Alternative would have little benefit to pelagic habitat, and would be further subject to lower outflow and higher exports under the Preferred Alternative. The lower outflow that Alternative 1 would allow in multiple circumstances compared to the existing RPA's would mean lower net flows to the Bay and also lower net flows in the north, central, and west Delta channels of the Sacramento and San Joaquin rivers; these are the low salinity habitats of Delta smelt, especially in drier years. Real-time management under these conditions offers little to decide. As described above, Alternative 1 would eliminate Fall X2 requirements currently required in Wet and Above Normal years. Alternative 1 would create a Delta Smelt Habitat Action with a number of actions that, like many of the other actions contemplated in Alternative 1, are contingent and subject to future planning and evaluation. These could include (without commitments) replacing Fall X2 with a requirement to maintain X2 at the 80km mark upstream, but with a series of off-ramps based in large part on real-time monitoring [Footnote 127: DEIS, p. 3-37 and 3-38/ [PDF Page] 71-72.]. To ostensibly offset the loss of habitat for Delta smelt from eliminating Fall X2 requirements in wetter water years, the DEIS proposes an option (not a commitment) to more frequently open the Suisun Marsh Salinity Control Gates (SMSCG) in June-October. This possible action in particular would likely increase the impacts of eliminating the Fall X2 requirements. Moving more Delta freshwater outflow into the Marsh would increase eastern Suisun Bay salinity and move the low salinity zone eastward. More Delta smelt might move into the Marsh, but episodic opening and closing of the gates could trap them in the Marsh and subject them to sporadic harsher salinity and water temperature conditions. Smelt in the low salinity zone in east Suisun Bay and the San Joaquin channel of the west Delta would suffer with less freshwater inflow.	It is unclear what the commenter is referring to by "nearly trivial and potentially detrimental habitat actions that the Smelt Working Group would have available to it". The preferred alternative includes a number of actions intended to benefit Delta Smelt, including summer-fall habitat and food enhancement actions, for example, as described in the EIS at Section 3.4, Alternative 1. The potential negative effects of the preferred alternative's proposed operations on factors the commenter mentions such as food production and habitat extent were analyzed in the EIS (see, for example, Appendix O, Section O.3, Evaluation of Alternatives, specifically Section O.3.3.8.1, Delta Smelt, and Section O.3.4.3.1., Delta Smelt). Although the commenter suggests that greater south Delta exports could affect water temperatures, the EIS noted that seasonal operations would not be expected to affect temperature to the point that predation risk is influenced (see Appendix O, Section O.3.3.8.1, Delta Smelt). The commenter suggests that the proposed summer-fall habitat actions including Suisun Marsh Salinity Control Gates operations could have negative effects on Delta Smelt. Actions to be implemented, including operations of the gates, will be made on an annual basis by a Delta Coordination Group, which would apply structured decision making in order to minimize risk, using knowledge gained from previous years of implementation, for example. The commenter suggests that maintenance of X2 at 80 km in September/October of wet and above normal years is "without commitment", whereas in fact this is the default initial operating condition, which would only be potentially modified if actions such as Suisun Marsh Salinity Control Gates operation and food enhancement result in benefits that provide similar or better protection than the 80-km X2 action.
43	50	The elimination and/or modification of RPA [Reasonable and Prudent Alternative]'s for Delta operations will further devastate longfin Delta smelt. The DEIS acknowledges potential increased entrainment risk to longfin smelt under the Preferred Alternative. However, the DEIS offers the soporific that "there is some uncertainty in the extent to which outflow changes of the magnitude possible with water operations would change abundance relative to outflow changes attributable to hydrological conditions (i.e., wetter vs. drier	Although entrainment may be a subset of potential outflow-related effects on Longfin Smelt, the commenter is combining two different components of the effects analysis for Longfin Smelt. With respect to entrainment, Section 5.9.1.7.7, Longfin Smelt, of the EIS note that although entrainment risk may increase, historical estimates suggest that proportional (i.e., population-level) losses would be limited; see Appendix O, Section O.3.3.8.2, Longfin Smelt, for more detailed discussion and discussion of potential changes in abundance.

Ltr#	Cmt#	Comment	Response
		years)" [Footnote 128: DEIS, p. 5-72/ [PDF Page] 202.]. Since longfin smelt abundance may be more heavily influenced by conditions in a drier year than by the changes under the Preferred Alternative, this would apparently make the impact of the changes less important. More on point, lower outflow caused by increased exports would harm longfin smelt, notwithstanding the number actually entrained.	Please also see Master Response 7 regarding potential changes to longfin smelt abundance and South Delta entrainment risk.
43	51	The elimination and/or modification of RPA's for Delta operations will further devastate San Joaquin River fall-run Chinook salmon and steelhead. The DEIS dismisses San Joaquin watershed fall-run Chinook with the observation; "San Joaquin River-origin juvenile Fall-Run Chinook Salmon are likely to be entrained at the salvage facilities at higher rates under all action alternatives." [Footnote 129: DEIS, p. 5-70/ [PDF Page] 200.]. San Joaquin watershed salmonids have been decimated by CVP and SWP Delta operations for decades, misdirected toward the Delta pumps through Old River and numerous other south Delta channels. The Vernalis Adaptive Management Program recognized this impact and limited CVP and SWP pumping for one month in April and May; this small but temporally inadequate improvement was abandoned after 2011. Since then, Action IV.2.1in the 2009 NMFS Biological Opinion, the San Joaquin River Inflow to Export Ratio, has been the only Delta flow condition that has marginally protected San Joaquin salmon from CVP and SWP pumping, as a by-product of a measure designed to protect steelhead. The Preferred Alternative proposes to eliminate the San Joaquin River Inflow to Export Ratio. As noted above, the Preferred Alternative also proposes to eliminate the Head of Old River Barrier, a feature that in the California WaterFix hearings Reclamation proposed to replace with a permanent structure. Reclamation's proposed treatment of San Joaquin fall-run salmon is the essence of Reclamation's approach in this DEIS. The protections in the SWRCB's Decision 1641 were inadequate to protect fish in the Delta. This created the need for the 2008 and 2009 Biological Opinions and RPA's. The RPA's triaged some of the worst problems, but were also inadequate to protect fish in the Delta. Now, failing to acknowledge the extent of the problem and the extent to which the CVP and SWP have created the problem, [Footnote 130: See discussion of cumulative effects, infra.]. Reclamation throws up its hands and writes off fisheries with palliatives and excuses, such as the notion that salvage will save a few [Footnote 131: DEIS, p. 5-70/ [PDF Page] 200. One could	The approach Reclamation undertook for the management of outmigrating juvenile salmonids was both to acknowledge the current landscape of the environment and select a best management practice. As described in the EIS (within Section 1.4.2.1, Hydrodynamic Effects on Juvenile Salmonids in the Tidal Delta, and within Section 5.9.1.7.3, Central Valley Fall-Run Chinook Salmon), recent studies suggest that San Joaquin River fall-run Chinook have a greater potential of survival through salvage at state pumping facilities than by moving through the San Joaquin River and through the Delta (Buchanan et al. 2018). Peter Moyle recently acknowledged that more flow couldn't fix the survival issue and highlighted the work by Buchanan et al. (2018) in an online post (Moyle 2018). It is acknowledged that the Delta is a complex and challenging area to manage, notably for its generally disturbed habitat due to a number of factors that extend beyond the reach of the Reclamation. Identifying the most efficient and effective pathway forward may not always be the natural pathway through the San Joaquin River with added flow, but can be salvage and transport. Current science suggests that is the case and the resultant management approach reflects best available science.

Ltr#	Cmt#	Comment	Response
		consider this the Merle Haggard approach to fisheries: “Never did have nothin’ I’ve got nothin’ much to lose.” (Truck Driver Blues).]	
43	52	The elimination and/or modification of RPA [Reasonable and Prudent Alternatives]’s for Delta operations will devastate Sacramento River Chinook salmon and steelhead. The DEIS conceals impacts of the Preferred Alternative to Sacramento River Chinook (winter-run, spring-run and fall-run) and Sacramento River steelhead by arguing for each species that “only a small proportion of the total population is lost at the export facilities.” [Footnote 132: DEIS, p. 5-69 and 5-70/ [PDF Page] 199 and 200. There is similar language for each life history of Sacramento River salmon and for Sacramento river steelhead]. This description downplays the actual effect of negative OMR [Old and Middle River] flows and export pumping, which is far greater than the direct effect of entrainment. The chance of survival for any salmon that negative OMR flows draw into the central Delta (through the Delta Cross Channel, Georgiana Slough or other route) is far smaller than the chance of survival of outmigrants that stay in the Sacramento River and thence enter Suisun Bay. This was a premise of the 2009 NMFS BiOp. The DEIS suggests that increased flow in the Sacramento River will more than offset the impacts of increased pumping at the CVP and SWP south Delta facilities: Increased flow in the Sacramento River mainstem would occur under all action alternatives and higher flow has been shown to increase through-Delta survival of juvenile Chinook Salmon and reduce routing into the interior Delta at Georgiana Slough. The Sacramento River mainstem is the primary migration route for juvenile Winter-Run Chinook Salmon, thus a much greater proportion of the population would be exposed to the positive effects of greater Sacramento River flows than would be exposed to the negative effects of increased exports [Footnote 133: DEIS, p. 5-69/ [PDF Page] 199. There is similar language for other life histories of Sacramento River salmon and for Sacramento river steelhead.]. It is unclear what the DEIS is referring to in the phrase “increased flow in the Sacramento River.” If this refers to increased releases in December-February due to possible increased minimum releases from Keswick under Alternative 1, or to less restrictions on exports during that time period, then winter-run salmon in particular would be more likely drawn into the central Delta. Prior to the 2009 NMFS BiOp, salvage of migrating winter-run juveniles was high during	The commenter asserts that negative OMR flows draw salmon into the central Delta through routes such as the Delta Cross Channel and Georgiana Slough; in fact, the hydraulic influence of the south Delta export facilities is much more localized, as demonstrated in the EIS, See Figures O-3 to O-6 in Attachment 1 of Appendix O. The commenter is unclear what is being referred to by “increased flow in the Sacramento River” – this is referring to modeled greater flow in the Sacramento River during some months, as reflected in hydrodynamic modeling, e.g., Figures O-7 to O-1 in Attachment 1 of Appendix O. The commenter is concerned about potential high salvage of winter-run Chinook salmon, but the preferred alternative (Alternative 1) includes cumulative salvage thresholds in order to limit potential negative effects, which the recently released NMFS biological opinion concludes would avoid jeopardy to the species, consistent with the 2009 Biological Opinion. Modeling results in the 2009 Biological Opinion suggest that differences in through-Delta survival of migrating juvenile salmonids would be expected to be slight, e.g., as indicated by the results of the Delta Passage Model (pages 381-384).

Ltr#	Cmt#	Comment	Response
		periods of high exports in December-February; this was a primary reason that the Biological Opinion required OMR restrictions for salmon. Winter-run juveniles emigrate primarily during winter in pulsed flows. Under the Preferred Alternative, during winter "increased flow," winter-run would be subject to greater risks due to higher exports and lower outflow. If the above-referenced "increased flow in the Sacramento River" refers to the fact that Reclamation simply plans to release more water from storage for export at any time of year, any benefit is likely outweighed by the movement of more salmon (regardless of life history) into the Central Delta. If the above-referenced "increased flow in the Sacramento River" refers to the contemplated spring pulse flows under Alternative 1, the benefit of this would be limited to those few years in which these spring pulse flows actually occurred, as discussed above. The statement that "a much greater proportion of the population would be exposed to the positive effects of greater Sacramento River flows than would be exposed to the negative effects of increased exports" contains a basic fallacy. A small percentage of salmonids born in the Sacramento River system survive to reach the Delta. While flows upstream do in fact affect more fish than Delta operations, this discounts the fact that the fish that make it to the Delta have already been reduced from those born by as much as 90% in a good year to 99% or more in a bad year. Alternative 1 would specifically eliminate export limitations during storms. Juvenile salmonids migrate downstream during storms. Eliminating protections during storms will attract high numbers of salmonids into the central Delta. This would be especially problematic in fall and early winter of drier years. In addition to increasing exports, Alternative 1 would also allow opening of the Delta Cross Channel gates more frequently in the winter and spring. This will increase movement of Sacramento juvenile salmon, steelhead, and sturgeon through the DCC and expose them to even higher exports. From a perspective of protecting migrating fish, it does not make sense to promote increased flow in the Sacramento River only to direct them into the central Delta. Reclamation should recirculate a DEIS that analyzes alternatives that would protect salmon and steelhead from CVP and SWP Delta operations.	
43	53	Alternative 4 could be partly sufficient to avoid take of Delta smelt and listed salmonids, but as written could adversely affect critical habitat and would not protect other public trust fishery resources consistent with applicable law.	Alternative 4 is described in Appendix D Section 4.6. See also Master Response 4, Alternatives Formulation for additional detail regarding the intent

Ltr#	Cmt#	Comment	Response
		The DEIS describes Alternative 4 as follows: Scoping comments proposed meeting a flow objective of 55% of unimpaired flows year round to mimic the natural hydrograph. However, a 55% requirement following the natural hydrograph results in high releases during winter and spring months, which constrain Reclamation's ability to meet cold water pool storage targets. Therefore, the flow objectives cannot be met in all conditions. For example, a flow action would not be taken in drier years to ensure cold water pool storage in reservoirs. During drier hydrologic conditions when the flow objectives are not met, Reclamation and DWR would operate the CVP and SWP to follow the operational objectives described in Alternative 1 and maintain the positive OMR. This operational regime would last from March through February, and the flow objectives would resume in the following March [Footnote 134: DEIS, Appendix D, p. 4-89/ [PDF Page] 282.]. Alternative 4 of the DEIS has the relative merit of at least trying to evaluate the SWRCB's July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan [Footnote 135: Framework for the Sacramento/Delta Update to the Bay-Delta Plan, op. cit.]. It evaluates a requirement that CVP and SWP reservoirs upstream of the Delta (excluding the Friant Division) release 55% of the unimpaired flow in all months. However, Reclamation proposes to waive this requirement in years when there would be what Reclamation considers it necessary to "balance this operation with the need to preserve the coldwater pool" [Footnote 136: DEIS, p. 1-2/ [PDF Page] 20.]. In addition, the 55% requirement applies only to CVP and SWP reservoirs, unlike the SWRCB's Framework document. Implied in Alternative 4 are a host of decisions that the DEIS does not spell out. For example, the threshold(s) at which the Alternative would waive the 55% flow requirement are unclear. It is also unclear if such waiver would be facility-by-facility or across the Board. Equally unclear is how specifically Reclamation would divide responsibility between the CVP and SWP; the modeling that the DEIS reports shows that the 55% requirement would be waived about 10% of the time at Shasta but 35% of the time at the SWP's Oroville Reservoir and up to 60% of the time at Folsom Reservoir [Footnote 137: DEIS, Appendix D, pp. 4-91 and 4-92/ [PDF Page] 284 and 285.]. Alternative 4 also includes restrictions on Delta operations that are as stringent as or more stringent than those under the No Action Alternative. Adoption of these measures would be an improvement over existing requirements [Footnote 138: See DEIS, Appendix D, Table 4.1-1 and Appendix F, pp. 36 ff.].	of Alternative 4 and the range of alternatives. The commenter does not raise significant environmental issues.

Ltr#	Cmt#	Comment	Response
43	54	Despite the partial effort of Alternative 4 to evaluate flow requirements consistent with the SWRCB's Framework, there are elements of Alternative 4 that would render it ineffective in protecting listed species. First among these is the absence of any carryover storage requirements, particularly at Shasta: Reclamation or DWR could draw down their reservoirs to meet both existing demands and instream flow requirements, increasing the risk of waivers in following years. Failure to include carryover storage in the ostensibly most environmentally protective alternative means that none of the action alternatives contains any carryover storage requirement for CVP and SWP project reservoirs. New Melones operation under Alternative 4 would also be reduced to the proposed operation under Alternative 1, which reduces Wet year and Above Normal year flow requirements by one water-year type from the existing RPA requirements and ignores the SWRCB's recently adopted flow objectives for the San Joaquin River in the Bay-Delta Plan. Finally, the SWRCB's 2010 Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem [Footnote 139: Op. cit.] suggests that a requirement for the release 55% of the unimpaired flow would not sufficiently protect listed and non-listed species. In addition, similar to the description of the other alternatives in the DEIS, the description of Alternative 4 lacks clarity and detail, and can only be partially gleaned by reviewing multiple sections and appendices of the document. Reclamation should include a revised Alternative 4 in a recirculated DEIS that corrects the substantive shortcomings noted here and that provides sufficiently clarity and detail to support informed evaluation and decision making.	Alternative 4 is described in Appendix D Section 4.6. See Master Response 4, Alternatives Formulation, regarding development of Alternative 4. See also Master Response 1, Responses to General Comments, regarding the requirements for a supplemental EIS.
43	55	The cumulative effects analysis in the DEIS fails to consider the cumulative effect of previous CVP and SWP operations. The Council on Environmental Quality defines cumulative effects as the impacts on the environment which result from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non- Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" [Footnote 140: 40 C.F.R. § 1508.7.]. The cumulative effects analysis in the DEIS fails to consider the cumulative effect of past actions of the CVP and SWP on the existing environment. Rather, as described in DEIS Appendix Y, the DEIS considers only actions other than	The Draft EIS in Appendix Y, references extensive projects related to the SWP, CVP and other water supply infrastructure projects that are relevant to the cumulative impact analyses (e.g. for Shasta and Oroville Reservoirs). Flow and temperature effects of these completed projects are generally accounted for in the No Action Alternative which describes the predictable conditions that would persist in the absence of Alternative 1or alternatives. Please refer to Appendix Y and discussion of cumulative impacts for aquatic resources in Section 5.20 of the Draft EIS.

Ltr#	Cmt#	Comment	Response
		previous CVP and SWP operations that may interact with future CVP and SWP operations under the Proposed Action [Footnote 141: DEIS, Appendix Y, p. Y1/ [PDF Page] 683, Table Y-1.]. This methodology leads to a degraded baseline against which the DEIS compares the incremental differences among project alternatives. This methodology was definitively rejected in American Rivers v. Federal Energy Regulatory Commission, 895 F.3d 32, 101 Fed.R.Serv.3d (2018), not only for NEPA but also for the ESA. The court held that a Biological Opinion failed because it “did not ‘incorporate degraded baseline conditions into its jeopardy analysis.’” Id. At 46. “[A]ttributing ongoing project impacts to the ‘baseline’ and excluding those impacts from the jeopardy analysis does not provide an adequate jeopardy analysis. The Opinion’s jeopardy analysis is arbitrary in failing to account for the impact of continued operations of the existing dams.” Id. at 47. The same ruling makes clear that the same deficiency is unlawful under NEPA: [T]he Service’s failure to factor the damage already wrought by the construction of dams into the cumulative impacts analysis fatally infected this aspect of the Commission’s NEPA decision as well. The Commission gave scant attention to those past actions that had led to and were perpetuating the Coosa River’s heavily damaged and fragile ecosystem. Nor did it offer any substantive analysis of how the present impacts of those past actions would combine and interact with the added impacts of the 30–year licensing decision. The Commission’s cumulative impact analysis left out critical parts of the equation and, as a result, fell far short of the NEPA mark. Id. at 54. Reclamation must issue recirculated DEIS that accurately describes past operations of the CVP and the SWP as part of the cumulative impact of project operations under the Proposed Action.	
43	56	The Proposed Action Would Violate the Central Valley Project Improvement Act. The Central Valley Project Improvement Act (CVPIA) made protection of fishery and other environmental resources an equal purpose of the Central Valley Project in relation to provision of water supply and other developmental purposes [Footnote 142: U.S.C. Title XXXIV, Sections 3402 and 3406.]. The DEIS’s stated purpose of maximizing water supply deliveries conflicts with this broad mandate.	See Master Response 1, Response to General Comments, for additional detail on Reclamation’s compliance with CVPIA and response to comment 43-56.

Ltr#	Cmt#	Comment	Response
		More specifically, the DEIS states: Reclamation would operate in accordance with its obligations under the CVPIA. This includes exercising discretion to take actions under CVPIA 3406 (b)(2). The Secretary of Interior may make water available for other purposes if the Secretary determines that the 800,000 AF identified in 3406(b)(2) is not needed to fulfill the purposes of Section 3406 [Footnote 143: DEIS, p. 3-3/ [PDF Page] 37.]. This aspect of the Proposed Action would allow the Secretary of the Interior complete discretion to appropriate water designated by Congress for environmental protection and repurpose it for water supply. Such discretion would unlawfully violate the express intent of Congress. Reclamation should revise the Proposed Action in a recirculated DEIS so that it is consistent with the legal requirements of the CVPIA.	
43	57	The DEIS's Economic Analysis fails to use best economic practices, is seriously deficient, incomplete, biased and blatantly misleading. The foundation of the Economic Analysis is fatally flawed and based upon unsupportable conclusions. Increased water supplies under Alternative 1 are itemized and economically evaluated in the DEIS. The DEIS also concludes that population of salmon along the southern Oregon and northern California coast would be higher under Alternative 1 and that consequently, commercial and recreational ocean harvest could potentially be increased leading to increased revenues [Footnote 144: DEIS, p. 5-94/ [PDF Page] 224.]. This is an unwarranted and unsupportable conclusion that defies more than three decades of scientific investigation and myriad administrative proceedings. These include CalFed, Delta Vision, BDCP, AFRP, numerous state and regional water board water rights and water quality hearings and orders, water quality control plans, multiple biological opinions, an array of adaptive management workgroups, innumerable environmental review documents, extensive habitat restoration efforts, etc., as well as the comprehensive hearings that led to the SWRCB's 2010 Flow Report and CDFW's Quantifiable Goals and Flows reports. The only constants throughout this checkered history is the continued degradation of fisheries and associated aquatic ecosystems and the diversion of more than half of unimpaired flow to consumptive uses. There is virtually nothing proposed in Alternative 1 that hasn't already been undertaken,	Please refer to Master Response 5, Adequacy of Analysis and Mitigation, for information on how the EIS satisfies NEPA requirements and utilizes the best available science in its impact analyses and conclusions. Based on agency and public comments on the Draft EIS and during the permit application planning process, Reclamation made several refinements to Alternative 1 since July 2019 and is updated in the Final EIS. Alternative 1 has been modified to clarify language, add performance metrics, modify thresholds for compliance, and add several habitat restoration and fish passage projects. Please see Master Response 4, Alternatives Formulation, for additional information regarding Alternative 1. Lastly, please refer to Master Response 7, Aquatic Resources, regarding potential impacts to fisheries.

Ltr#	Cmt#	Comment	Response
		committed to or required by law. The conclusion that additional diversions of water and reduced Delta outflow will somehow increase fisheries is laughable on its face.	
43	58	The DEIS only monetizes the consumptive and power uses of water. The DEIS provides detailed assessments of the effects of the Project and various alternatives on the consumptive uses of water: i.e., agriculture, M&I, power production, water transfers and regional economies. It quantifies changes in irrigated farmland and jobs from the various alternatives. With respect to regional economics, it states: This impact assessment is based on the technical analysis documented in Appendix Q, Regional Economics Technical Appendix, which includes additional information on regional economics and technical analysis of the effects of each alternative. The analysis is based on results of several models: Statewide Agricultural Production (SWAP) model, which estimates economic effects on agriculture associated with changes in CVP and SWP deliveries; California Water Economics Spreadsheet Tool (CWEST), which estimates economic effects on M&I users from changes in CVP and SWP deliveries; and Impact Analysis for Planning (IMPLAN) model, which produces total economic effects [Footnote 145: DEIS, p. 5-90/ [PDF Page] 220.]. The results show that the Proposed Action is largely beneficial for consumptive uses of water. For example, annual M&I water supply costs under Alternative 1 compared to the No Action Alternative would be reduced by $30.1 million, while annual water supply costs of Alternative 4 compared with the No Action Alternative would increase by $22.6 million [Footnote 146: DEIS, Table 5.11-1, p. 5-91/ [PDF Page] 221.]. Annual agricultural water supply costs under Alternative 1 compared to the No Action Alternative would be reduced by $50 million, while annual agricultural water supply costs of Alternative 4 compared to the No Action Alternative would increase by $33 million [Footnote 147: DEIS, Table 5.11-3, p. 5-93/ [PDF Page] 223.]. Similarly, annual water supply costs to Southern California under Alternative 1 compared to the No Action Alternative would decrease by $25.6 million, while annual water supply costs under Alternative 4 compared to the No Action Alternative would increase by $16.3 million [Footnote 148: DEIS, Table 5.12-1, p. 5-96/ [PDF Page] 226.]. In contrast, there is no detailed analysis for fisheries and their supported economy. The DEIS acknowledges that the alternatives could change the salmon population. However, population changes to the primary commercial, sport and tribal fall-run Chinook salmon fishery are not projected in the EIS.	As noted in Appendix Q, regional economic effects were analyzed using quantitative and qualitative methods. Water supply impacts (M&I and agricultural water supply impacts) were evaluated quantitatively using the CWEST and SWAP models, respectively. Fisheries-related and program-related effects (includes construction, maintenance, and other program-level actions) were evaluated qualitatively. It should be noted that CEQ NEPA regulations do not mandate quantitative analysis and qualitative comparative analysis is an acceptable approach when drawing conclusions about the significance of environmental impacts.

Ltr#	Cmt#	Comment	Response
		The DEIS only presents a qualitative analysis of potential changes in socioeconomic factors under the alternatives [Footnote 149: DEIS Appendix Q, p. Q-17/ [PDF Page] 17.]. And the qualitative assessment is that fish numbers will increase, and that consequently the economic impacts of Alternative 1 will be beneficial to the regional economy [Footnote 150: DEIS, p. 5-94/ [PDF Page] 224.]. This conclusion is disingenuous, unsupportable and flies in the face of historical reality.	
43	59	The DEIS inexplicably and improperly excludes the universe of non-developmental and passive uses of water. While the authors of the DEIS expended considerable effort to quantify and monetize the Proposed Project's effects on water supply and power, they ignored the fact that non-use values are considered public goods that can be enjoyed by millions of people. A discussion and analysis of non-use values is crucial to an informed economic assessment. For example, existence value is a non-use value defined as benefits received from simply knowing that a resource exists and ecosystems provide a vast suite of goods and services, generally referred to as ecosystem services. In fact, the words non-use benefits, non-market valuation, existence benefits, ecosystem services, contingent valuation and cost benefit analysis do not appear in the DEIS or its appendices.	Appendix Q summarizes regional economic effects of the alternatives. Regional economic effects are defined as changes to employment, income, or output that could result from implementation of the project alternatives. NEPA states the following with regard to analysis of economic effects (Title 40, Code of Federal Regulations, Section 1508.14): "…economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." Since non-use benefits are not expected to affect the regional economy, this is not evaluated in Appendix Q. The EIS evaluates impacts to fisheries in Appendix O and economic impacts from reduced fisheries is discussed in Appendix Q. The EIS also evaluates impacts to Indian Trust Assets, visual resources, recreation and environmental justice impacts in Appendices J, N, S, and T, respectively.
43	60	Ecosystem goods and services are frequently viewed as free benefits to society or public goods. They include habitat and diversity, watershed services, nutrient cycling, carbon storage, scenic landscapes, etc. Lacking a formal market, these natural assets are traditionally absent from society's balance sheet and are generally overlooked in decision-making. For example, inadequate instream flow reduces dilution and leads to increased concentration of pollutants to harmful levels. Inadequate flows allowed the Asian clam (Corbicula fluminea) to become established and expand into the Delta, devastating the aquatic food supply and serving as a pathway for selenium to bioaccumulate in fish to unsafe levels. Inadequate flows have led to the serious proliferation of aquatic plants like the waterweeds E. densa and water hyacinth and harmful algal blooms (HAB) like Microcystis that pose threats to public safety. All of these affect pocketbooks and public trust resources, and all have significant economic consequences. An array of accepted methods and best	See response to comment 43-59.

Ltr#	Cmt#	Comment	Response
		practices has been developed to evaluate ecosystem goods and services. Unfortunately, these methods and practices were ignored in the DEIS's economic assessment. In 2005, the National Research Council of the National Academies issued an extensive 291-page peer reviewed report titled Valuing Ecosystem Services: Toward Better Environmental Decision-Making that discussed the value of natural capital and the principles and practices of valuing the services of aquatic and related terrestrial ecosystems. It outlined the major nonmarket methods currently available for estimating monetary values of ecosystem services. Among the report's conclusions, it recommended that, "Policymakers should use economic valuation as a means of evaluating the trade-offs involved in environmental policy choices; that is, an assessment of benefits and costs should be part of the information set available to policymakers in choosing among alternatives" and that "both use and nonuse values should be included" [Footnote 151: National Research Council, Valuing Ecosystem Services, 2005, pp. 6, 8-10. The reports can be found at: https://www.nap.edu/read/11139/chapter/1#ii.]. The federal Principles and Requirements for Federal Investments in Water Resources (P&R) helps federal agencies like BOR plan water-related projects. The document observes that federal investments in water resources strive to maximize public benefits and that public benefits encompass environmental, economic and social goals, include monetary and non-monetary effects and allow for the consideration of both quantified and unquantified measures. It recommends an ecosystem approach to capture all effects of a project [Footnote 152: Principles and Requirements for Federal Investments in Water Resources, March 2013, pp. 3, 5, 6. https://obamawhitehouse.archives.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf]. The Interagency Guidelines (PR&G) are to be used in conjunction with the P&R. In evaluating project alternatives, agencies must evaluate ecosystem services, which include provision services, regulating services and cultural services. Cultural services include recreation, aesthetic, spiritual, existence and option values. It refers to Office of Management and Budget circulars for discussion on opportunity costs and willingness to pay concepts of value [Footnote 153: Interagency Guidelines, December 2014, pp. 21-22. https://obamawhitehouse.archives.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf]. The DEIS ignores these federal principles and guidelines.	

Ltr#	Cmt#	Comment	Response
43	61	The goal of the Department of the Interior's (DOI) Agency Specific Procedures For Implementing the Council on Environmental Quality's Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies is to ensure that DOI offices consistently apply a common framework for analyzing a diverse range of projects and actions. It requires an ecosystem approach that captures use and non-use values. Economic assessments should include all components of total economic value, including both use and non-use values. Non-use values include existence and bequest values and methods for estimating them include contingent valuation and conjoint analysis [Footnote 154: DOI, Agency Specific Procedures For Implementing the Council on Environmental Quality's Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies 2015, pp. 35-43.]. The DEIS ignores DOI guidelines.	See response to comment 43-59.
43	62	BOR's Technical Services Center in Denver Colorado contains a wealth of information on economic guidelines and reports on evaluating ecosystem services and non-use benefits [Footnote 155: Reclamation, Technical Service Center. https://www.usbr.gov/tsc/techreferences/ecoreports.html]. These include: Contingent Valuation Method: An Introduction, [Footnote 156: Contingent Valuation Method: An Introduction, 2000. https://www.usbr.gov/tsc/techreferences/economics/ContingentValuationMethodTM-EC-2000-03_2000.pdf]. Economic Nonmarket Valuation of Instream Flows [Footnote 157: Economic Nonmarket Valuation of Instream Flows, 2000. https://www.usbr.gov/tsc/techreferences/economics/Flowpaper1.pdf], Estimated Fishery Economic Use Values [Footnote 158: Estimated Fishery Economic Use Values, EC-2008-02, 2008. https://www.usbr.gov/tsc/techreferences/economics/FINAL_FisheryUseValues_M&S.pdf], Handbook for Estimating the Economic Value of Changes in Fish and Wildlife Resources [Footnote 159: Handbook for Estimating the Economic Value of Changes in Fish and Wildlife Resources, TM-EC-96-13. https://www.usbr.gov/tsc/techreferences/economics/HandbkForEstimatgEconomicValueOfChangesInFWResourcesTM-EC-96-13_1996.pdf], Introduction to Conjoint Analysis for Valuing Ecosystem Amenities [Footnote 160: Introduction to Conjoint Analysis for Valuing Ecosystem Amenities. https://www.usbr.gov/tsc/techreferences/economics/conjoint/TMEC200803.pdf], and Using Contingent Valuation and Benefit Transfer to Evaluate Water Supply Improvements Benefits [Footnote 161: Using Contingent Valuation and Benefit Transfer to Evaluate Water Supply Improvements Benefits.	See response to comment 43-59.

Ltr#	Cmt#	Comment	Response
		https://www.usbr.gov/tsc/techreferences/economics/UsingContingentValuation&BenefitTransferToEvaluateWaterBenefits_1998.pdf]. EPA has developed two comprehensive guidelines for preparing economic analyses and valuing ecosystem services. The first, Guidelines for Preparing Economic Analyses, extensively discusses accepted methods, economic tools and best practices for valuing non-use values (bequest and existence values and paternalistic altruism) [Footnote 162: EPA, Guidelines for Preparing Economic Analyses, 2010. https://www.epa.gov/sites/production/files/2017-08/documents/ee-0568-50.pdf]. The second, Valuing the Protection of Ecological Systems and Services, identifies and describes accepted procedures, methods and best practices for determining the value of ecosystem services, including the use of contingent valuation or conjoint analysis for assessing non-use values [Footnote 163: EPA, Valuing the Protection of Ecological Systems and Services, 2009. https://yosemite.epa.gov/sab%5CSABPRODUCT.NSF/F3DB1F5C6EF90EE1852575C500589157/%24File/EPASAB-09-012-unsigned.pdf]. The U.S. Forest Service has developed a General Technical Report titled, Evaluating Benefits and Costs of Changes in Water Quality. The report addresses market and nonmarket techniques for estimating economic values for changes in water quality on various water uses. It discusses identifying monetary values resulting from changes in water quantity, clarity, salinity, total suspended solids, temperature and dissolved oxygen on municipal, industrial, agricultural, recreational, hydropower and nonmarket uses of water. Nonmarket values for water include onsite use, value and nonuser benefits. Nonuser benefits of water include benefits people obtain without making direct use of water, such as ecological value, preservation benefits, and option or bequest values [Footnote 164: USDA, Evaluating Benefits and Costs of Changes in Water Quality, 2002, pp.1-26, 27. https://www.fs.fed.us/pnw/pubs/gtr548.pdf]. DWR has developed guidelines on economic analysis, including the Economic Analysis Guidebook, which describes an array of methods for valuing ecosystem services and non-use value [Footnote 165: DWR, Economic Analysis Guidebook, 2008. https://water.ca.gov/LegacyFiles/pubs/planning/economic_analysis_guidebook/econguidebook.pdf]. Under an EPA grant, DWR also produced four studies on assessing economic costs titled Ecosystem Valuation Methods, Natural Floodplain Functions and Societal Values, Middle Creek Restoration Project	

Ltr#	Cmt#	Comment	Response
		Case Study: Benefit and Cost Analysis, and Floodplain Management Benefit and Cost Framework. Establishing an economic value of natural ecosystems is neither a new or novel concept. In 1985, John B. Loomis of the University of California Davis' Division of Environmental Studies Department of Agricultural Economics conducted a cost/benefit balancing of Mono Lake. The report titled Balancing Public Trust Resources of Mono Lake and Los Angeles' Water Right: An Economic Approach" found that the value of restoring Mono Lake was worth 57.3 - 133.5 times the cost of replacing a significant percentage the Los Angeles' water supply [Footnote 166: CSPA, Attachment 8, John B. Loomis, Balancing public trust resources of Mono Lake and Los Angeles' Water Right: An economic approach, 1987.]. The SWRCB was sufficiently impressed with the study that it required Jones & Stokes Associates, the Board's contractor developing the Mono Lake EIR, to perform a more thorough market analysis. The economic values from that survey were counted dollar for dollar as equivalent to hydropower and water supply benefits and costs in the different alternatives analyzed in the EIR. The EIR analysis demonstrated that the annual benefits of raising the lake level vastly outweighed the costs of significantly reducing Los Angeles' water diversions from the lake [Footnote 167: Mono Lake EIR, Chapter 3, Table 3n-14, 1992. https://www.monobasinresearch.org/images/mbeir/dchapter3/table3n-14.pdf]. John Loomis subsequently published a study on the increasing acceptance of non-market valuation studies in water resource management assessments [Footnote 168: CSPA, Attachment 9, John B. Loomis, Use of non-market valuation studies in water resource management assessments, 1997.]. Researchers with the US Geological Survey's Biological Resources Division in Fort Collins, Colorado conducted a study titled The Economic Value of Trinity River Water. The study compared the non-market value of allowing more water to flow down the Trinity River with the market uses of diverted water; i.e. the social costs to hydropower, irrigated agriculture, etc. As much as 90% of Trinity water was historically diverted to the Sacramento River for irrigation. The annual benefits of significantly reducing diversion of water exceeded the value of the status quo by almost 19 times [Footnote 169: USGS, The Economic Value of Trinity River Water, 1999. http://www.ajdouglasecon.com/files/reprint_folder/B7_0002.pdf]. Evaluating ecosystem and non-use values in determining the benefits of proposed projects is increasing common, which is why BOR's failure to	

Ltr#	Cmt#	Comment	Response
		include them in the economiceffects analysis of the DEIS is perplexing. For example, BOR conducted a study titled Klamath River Basin Restoration Nonuse Value Survey that demonstrated that dam removal far outweighed the impacts of non-removal [Footnote 170: CSPA, Attachment 10, BOR, Klamath River Basin Restoration Nonuse Value Survey, 2012.]. EcoNorthwest recently conducted a study titled Lower Snake River Dams, Economic Tradeoffs of Removal that revealed that the benefits of removing the dams far exceeded the alternative [Footnote 171: ECONorthwest, Lower Snake River Dams, Economic Tradeoffs of Removal, 2019. https://static1.squarespace.com/static/597fb96acd39c34098e8d423/t/5d41bbf522405f0001c67068/1564589261882/LSRD_Economic_Tradeoffs_Report.pdf]. EcoNorthwest also produced a report for Restore Hetch Hetchy titled Valuing Hetch Hetchy Valley: Economic Benefits of Restoration in Yosemite Nation Park that identified the enormous economic benefits that would accrue from restoring the valley. The report surveyed a number of other willingness to pay studies including; Grand Canyon Flow Augmentation South Platte River Restoration, Elwha and Glines Dam Removal, Klamath Basin Restoration, etc. [Footnote 172: ECONorthwest, Valuing Hetch Hetchy Valley: Economic Benefits of Restoration in Yosemite National Park, 2019. https://d3n8a8pro7vhmx.cloudfront.net/hetchhetchy/pages/29/attachments/original/1562697333/Valuing_Hetch_Hetchy_Valley__ECONorthwest_2019__Full_Report_part_2.pdf?1562697333]. ECONorthwest also produced a study for us titled Bay-Delta Water, Economics of Choice that described basic economic practices, the SWRCB's balancing of Mono Lake, the ecological use of public trust resources, an array of federal and state methods and guidebooks on evaluating water projects, the principles of benefit-cost analyses, risk and uncertainty and other issues pertaining to the Bay- Delta, such as environmental justice concerns [Footnote 173: CSPA, Attachment 11, ECONorthwest, Bay-Delta Water: Economics of Choice, 2013.]. Clearly, there are generally accepted methods and best practices for evaluating ecosystem services, non-market, non-use and passive uses of water. And clearly these methods and practices have been routinely employed in evaluating water projects. As previously noted, the DEIS quantifies and monetizes the Proposed Action's effects on water supply and consumptive uses of water while only qualitatively considering the effects on commercial and recreational fisheries based upon an unsupportable conclusion that somehow there will be more fish. To then ignore the Proposed Action's effects on ecosystem services and non-market, non-use and passive uses of water effectively places a stack of	

Ltr#	Cmt#	Comment	Response
		bricks on one side of the scale. The DEIS must be revised to ensure that the public and decision-makers receive a balanced assessment of the impacts and effects of the Proposed Action. As it stands, the DEIS is fatally flawed because its economic analysis does not comply with NEPA's requirements for fair disclosure.	
43	63	The DEIS fails to comprehensively evaluate the full spectrum of economic and social consequences of the Proposed Action. The Proposed Action is a massive undertaking that seeks to significantly increase water diversions and exports at the expense of outflow to the Bay. If implemented it will inevitably have major known and unknown consequences that affect the incredibly complex and highly degraded ecosystem that comprises the Bay-Delta estuary and its tributary waterways. Those consequences have the potential to adversely affect millions of Californians throughout the state. Any project of this magnitude must consider all of the environmental consequences, social effects and costs and benefits of alternatives including both market and non-market effects, use and non-use values, uncertainty and risk and follow rigorous professional standards and methods of analysis. It must consider benefits and costs to both agricultural and urban uses, as well as commercial fishing, recreational and passive uses. It must analyze benefits and costs of ecosystem services and contingent valuation or the value Californians place on a healthy ecosystem. The DEIS must be revised to include an evaluation of the effects of the Proposed Action on the full spectrum of identified uses of water and be recirculated. Otherwise the DEIS will remain seriously deficient as a NEPA fair disclosure document.	See response to comment 43-59.
43	64	The DEIS fails to consider the constitutional mandate to prevent the waste and unreasonable use of water. The Proposed Action is a joint effort by DWR and BOR. As noted previously, the CVP is required to comply with state law and DWR, as a state agency, is required to comply with the California Constitution. Article 10, Section 2 of the Constitution states: It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and	Alternative 1 is consistent with applicable state law requirements. Please see Master Response 1, Responses to General Comments, regarding Reclamation's compliance with applicable state and federal laws.

Ltr#	Cmt#	Comment	Response
		that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water. California has a Mediterranean climate that experiences frequent droughts. The state also has an overappropriated water supply where demands for water exceed supply. It is beyond reasonable that the DEIS, for a Proposed Action that would supply more water for consumptive purposes and thereby reduce water available to support a seriously degraded aquatic ecosystem, should analyze whether the increased diversion of water is reasonable and whether the water would be put to a reasonable and beneficial use. California agriculture comprises 2% of the state's GDP and uses an estimated 29 MAF of water. Scientists connected with the U.C. Davis Center for Watershed Sciences conducted a study of agricultural water use. They found that the top revenue producing and job creating commodities use the least water. Vegetables, horticulture, non-tree fruits, deciduous fruits, cucurbits (melons, squash, cucumbers, watermelon, zucchini, etc.), tomatoes, vine (wine and table grapes), onions, potatoes, etc. produce 81.8% of the jobs and 62.7% of the revenue but only use 21.5% of the water. By comparison, irrigated pasture, alfalfa, corn, almonds, pistachios and cotton use 53.7% of water but only provide 19.6% of the revenue and 13.9% of the jobs [Footnote 174: UC Davis Center for Watershed Science, Jobs per drop irrigating California crops, 2015. https://californiawaterblog.com/2015/04/28/jobs-per-drop-irrigating-california-crops/]. A recirculated DEIS must discuss and analyze whether the additional water to be diverted by the Proposed Action would be put to a reasonable and beneficial use and whether the state's economic and social interests would be best served by leaving that water in rivers to serve the aquatic ecosystem. Failure to conduct such an analysis renders the DEIS deficient as a fair disclosure documents and deprives the public and decision-makers of information necessary to make an informed decision.	
43	65	Modeling for the DEIS appears to include elements not required as part of the project description, and the description of modeling in the DEIS is unclear.	Model assumptions are provided in Appendix F, Modeling Technical Appendix.

Ltr#	Cmt#	Comment	Response
		Modeling in the DEIS appears to become a substitute for defining the proposed action. For instance, the “example” spring pulse flows shown in Table 3.4-2 were apparently modeled as part of the Proposed Action, even though the actual values have yet to be determined. This violates NEPA because it does not provide a clear project description and provides analysis of an action that is not part of the Proposed Action. If we are mistaken in this understanding, it is because the presentation of the scenarios modeled are so lacking in detail that a reasonably well-informed reader cannot discern them, even with hours of review. If there is a table that shows exactly each component that Reclamation modeled for each alternative, we could not find it. The presentation of the specifics of what Reclamation modeled as part of the alternatives is so incomplete and hard to follow the DEIS fails under NEPA on grounds of basic lack of clarity.	
43	66	The section of the DEIS that deals with groundwater inaccurately states that increasing water supply deliveries south of Delta will reduce groundwater pumping. The Groundwater section of the DEIS erroneously concludes: Alternatives 1, 2, and 3 would generally increase surface water supplies to CVP and SWP contractors. An increase in surface water supply would decrease the reliance on groundwater and result in less groundwater pumping [Footnote 175: DEIS, p. 5-121/ [PDF Page] 251.]. This evaluation assumes a simple direct relationship that surface water applied is groundwater not pumped. This metaphor assumes that the impacts of the Proposed Action on groundwater are limited to acreage that is currently under cultivation. However, as Mark Arax documents extensively in The Dreamt Land: Chasing Water and Dust Across California, the last century of water development in California has shown that increases in surface water supply tend to lead to increases in irrigated land [Footnote 176: Mark Arax, The Dreamt Land: Chasing Water and Dust Across California, Alfred A. Knopf, New York, 2019.]. Increased acreage under cultivation places increased pressure on groundwater when drought strikes, as it inevitably does in California. Overall, increased acreage under cultivation creates the cumulative and long-term need for increases in pumping groundwater. Implementation of the Preferred Alternative (or Alternatives 2 or 3) would be likely to expand the geographic extent of over-reliance on groundwater. Yet even if it did not, huge amounts of land already under cultivation in California,	Appendix I, Groundwater Technical Appendix, provides groundwater modeling results that show the simulated change in groundwater pumping for each of the four Action Alternatives as compared to the No Action Alternative. Tables I.2-1 and I.2-2 show a comparison of the average annual simulated pumping for each of the 42 years of the USGS’s Central Valley Hydrologic Model’s simulation period. The simulation results presented represent the conditions if an Action Alternatives was in place during this range of historical wet/dry conditions. Action Alternatives 1, 2, and 3 show less simulated pumping than in the No Action Alternative. The pumping in Alternative 4 is slightly increased above the No Action Alternative. Figures I.2-26 through I.2-69 show the change in groundwater levels resulting from the simulation of the four Action Alternatives as compared to the No Action Alternative.

Ltr#	Cmt#	Comment	Response
		particularly in the southern San Joaquin Valley, already rely on groundwater to backfill water supply in dry years. Much of this land draws on groundwater that is increasingly dropping in surface levels. For these lands, implementation of the Preferred Alternative will likely delay the fallowing of land with marginal water supply and a movement toward a condition where available water is less out of balance with demand. Implementation of the Preferred Alternative will thus prolong and increase the debt load on surface water, which can only be paid back in dry years with increased groundwater pumping. It would move California away from consensus that the state's waters are overappropriated and over-allocated, and away from solutions that are managed and relatively manageable. In considering effects of the Preferred Alternative on groundwater, the DEIS considers only a close-up view and fails to consider the likely response of water users to a broad change in approach to water management. A recirculated DEIS should disclose that increasing dependence on sources of water supply that are already severely stressed will accelerate catastrophic days of reckoning.	
43	67	[ATT1:] Attachment 1: CSPA submittals to SWRCB in 2014 and 2015	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	68	[ATT2:] Attachment 2: SacPAS: Central Valley Prediction & Assessment of Salmon, Performance Measures RPA I.2.1 Summer Temperature Target, 10 Year Average (2009-2018) RPA Temperature Target Analysis and Exceedance	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	69	[ATT3:] Attachment 3: SacPAS: Central Valley Prediction & Assessment of Salmon, Performance Measures RPA I.2.1 End-of-September (EOS) Carryover Storage 1987-2018.	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	70	[ATT4:] Attachment 4: Red Bluff Temperature, Compliance with 56ºF Criterion - 15 May – 31 October, 2001-2019, California Data Exchange Center	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	71	[ATT5:] Attachment 5: BOR Deliveries to Sacramento River Contractors in 2014, 2015 and 2016	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	72	[ATT6:] Attachment 6: Salmonid Populations of the Upper Sacramento River Basin in 2017, USRBFP Technical Report 02-2018, Aerial Redd Counts, 1969-2017	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
43	73	[ATT7:] Attachment 6: Salmonid Populations of the Upper Sacramento River Basin in 2017, USRBFP Technical Report 02-2018, Aerial Redd Counts, 1969-2017	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	74	[ATT8:] Attachment 8: Loomis, Balancing Public Trust Resources of Mono Lake and Los Angeles's Water Right: An Economic Approach	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	75	[ATT9:] Attachment 9: Loomis, Use of Non-Market Valuation Studies in Water Resource Management Assessments	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	76	[ATT10 :] Attachment 10: RTI International for BOR, Klamath River Basin Restoration Nonuse Value Survey [Note: this document is not labelled as an exhibit because it is password protected.]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
43	77	[ATT11:] Attachment 11: ECONorthwest, Bay-Delta Water: Economics of Choice	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
44	1	The DEIS is Seriously Deficient. The DEIS has numerous deficiencies and should be withdrawn. To start, the use of a model with a data end date of 2003 is too obsolete. It is also apparent that too much uncertainty is present in the DEIS regarding the scope, technical basis, and practical utility of the CalSim II model to support due trust in the modeling for a project of this magnitude. For this, the minimal disclosure and analysis of significant direct, indirect, and cumulative impacts together, and the almost complete dearth of maps to support all the geographic text, the Bureau must withdraw the DEIS or revise and recirculate it for additional public review and comment before a final Project EIS is considered.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 7, Aquatic Resources, and Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding modeling used in the analysis of impacts to aquatic resources and water resources. Refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding the use of best available science and requirements for analysis in the EIS.
44	2	Lack of Project Description Clarity Unfortunately we [AquaAlliance, California Sportfishing Protection Alliance, California Water Impact Network] are forced to summarize the "proposed action" that appears to be to obtain more water for points south of the area of origin, the Sacramento Valley. However, this is not stated, but it is the subtext that is determined by thorough reading of what details are present in the DEIS. The document on page 1-1 states that the purpose is: “Reclamation prepared this environmental impact statement (EIS) to analyze potential modifications to	Please see Master Response 1, Responses to General Comments, regarding the purpose and need.

Ltr#	Cmt#	Comment	Response
		the continued long-term operation of the CVP, for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. This EIS evaluates alternatives to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species." This continues the obfuscation that started at the scoping meeting on January 25, 2018. As an example, the federal register notice [Footnote 1: Federal Register /Vol. 82, No. 249 / Friday, December 29, 2017 /Notices. pp. 61789-61791] and the scoping meeting material failed to disclose the current amount of water the Central Valley Project ("CVP") exports, the proposed increase, and the combined current and proposed exports planned with the California Department of Water Resources ("DWR") through the State Water Project ("SWP"). The DEIS has not made any of these specific Project details clearer.	
44	3	Purpose and Need The EIS states that, "The need for the action is to use updated scientific information to better meet statutory responsibilities of the CVP and SWP. The purpose of the action considered in this EIS is to continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species" (p. 2-2). Stated somewhat differently on page 1-1, "Reclamation prepared this environmental impact statement (EIS) to analyze potential modifications to the continued long-term operation of the CVP, for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. This EIS evaluates alternatives to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species." What is not stated, but understood by water insiders as the Project purpose, is that it seeks to export more water at the continued expense of California's biological heritage and the vast majority of its people. What is not provided regarding the "need" for the Project rhymes with the unstated answer: greed. And how does "addressing the status of listed species" comply with the federal Endangered Species Act ("ESA") and the California Endangered Species Act ("CESA")? The Bureau must comply with the ESA and with California's laws	The alternatives addressed in the Draft EIS reflect the purpose and need for the action. Please refer to response to comment 42-1. Please see Master Response 4, Alternatives Formulation regarding the range of alternatives evaluated. Please see Master Response 2, Related Regulatory Processes, regarding the process for complying with ESA. Please see also Master Response 1, Responses to General Comments. CESA compliance for actions under the jurisdiction of the California Department of Water Resources is currently occurring under a separate CESA permitting process.

Ltr#	Cmt#	Comment	Response
		as codified in the CVPIA, not merely “address” the “status” of listed ESA and CESA species. It may just be the mindset of the Bureau and DWR to “address” the species like a burr under their saddle, but the laws require must more than that. And you will be held accountable.	
44	4	Lack of Proper Notification of Project DEIS After receiving notification of the Project’s scoping in a news release dated January 3, 2018, AquAlliance requested by an e-mail to Katrina Harrison of the Bay-Delta Office that it was proper to hold a third scoping meeting in the largest urban area north of Sacramento. We appreciated the Bureau’s response that led to a scoping meeting in Chico on January 25, 2018, which was well noticed and attended by over 150 people, the vast majority of the “approximately 200 people” that attended all three scoping meetings.[Footnote 2: USBR 2018. Scoping Report. p. 3-1] With regular communication from Ms. Harrison about the Project in the ensuing 18 months, when it was time for notification for the DEIS, the Bureau failed to properly notify AquAlliance. (40 CFR 1506.6) It took tenacity and elevation of the issue to the Regional Director to rectify the error and extend the comment period by the days lost.	Please see Master Response 1, General Comments, for information regarding the adequacy of public noticing, and the duration of comment period.
44	5	Source Water is Undefined The Project must unambiguously identify the source water. The Project seeks to increase CVP agricultural deliveries by 23%-39% under Alternatives 1 [preferred alternative] for the San Joaquin hydrologic region.[Footnote 3: USBR 2019. DEIS Revisions to the Coordinated Long-Term Operation of the Central Valley Project and State Water Project. p. 5-13.] An increase of this magnitude is somewhere between 1-2 MAF, yet the DEIS fails to provide numbers in acre-feet and to identify how the water will be made available. Since South of Delta exports appreciably depend on Sacramento River inflows, where will the increased export water come from during all years and in particular, drought years? The Sacramento River hydrology clearly shows that there are few years that can be clearly identified as average; most of the years are clustered in to two groups, a dry group (56% of the years, average 12.5 MAF, 4-river index) and a wet group (44% of the years, average 24 MAF, 4-river index). Some of the driest years can barely support senior diverters in the Sacramento Valley with very small allowances for Delta outflow.	Under these alternatives, Reclamation has not changed the source of water used to provide CVP and SWP deliveries. Appendix H, Water Supply Technical Appendix, Section H.2 provides the change in acre-feet of deliveries under each alternative. Appendix F, Attachment 3-9 provides additional detail regarding the total change in deliveries (in acre-feet) for each alternative compared to the No Action Alternative, by contractor type and region, and for the system as a whole. Appendix F also provides the assumptions used for modeling water deliveries under each alternative.
44	6	The total claims to consumptive water available in the Delta watershed, including the Trinity River and its tributaries, are not presented in the DEIS. As AquAlliance has presented many times to the Bureau, the unimpaired runoff of the Sacramento River basin is 21.6 MAF, but the consumptive use claims are	The EIS presents descriptions of the existing water supply delivery conditions for water users potentially affected by the alternatives and the anticipated changes to those water deliveries with implementation of the alternatives. The water delivery forecasts developed for and presented in the EIS were made

Ltr#	Cmt#	Comment	Response
		an extraordinary 120.6 MAF – 5.6 times more claims than there is available water.[Footnote 4: California Water Impact Network, AquAlliance, and California Sportfishing Protection Alliance 2012. Testimony on Water Availability Analysis for Trinity, Sacramento, and San Joaquin River Basins Tributary to the Bay-Delta Estuary.] The DEIS is seriously deficient without this information. The DIES also fails to inform the public of the CVP and SWP's junior claims to water, which is another serious omission.	using modeling tools reliant on historical hydrology data observed across the study area as well as conveyance system operations requirements including those dictated by water right seniority.
44	7	Despite a 1-2 MAF increase in water for south of Delta CVP agriculture that we extrapolated from the percentages offered (23%-39%), the DEIS claims that few impacts will occur in the Sacramento, Feather, and American rivers and what does is insignificant. "The alternatives would have minor changes in deliveries relative to the No Action Alternative. Alternatives 1, 2, and 3 decrease (by less than 5%) average annual deliveries to the Settlement Contractors. In addition to the Settlement Contractors, Alternative 4 would decrease (by less than 5%) deliveries to CVP M&I, CVP agricultural, and SWP M&I deliveries. The CalSim II model was used to estimate operations."[Footnote 5: Id. p. 5-11.] These conclusory statements are not supported in the DEIS, which NEPA requires to assist the public review process.	The predicted changes in water deliveries presented in the Draft EIS relied on outputs from the CalSim II Model that is described in detail in Appendix F. The modeling evaluated the system-wide response to implementation of the alternatives and reported changes in reservoir storage, reservoir releases, water supply diversions, and deliveries at locations across the study area. The comparisons of anticipated changes in water deliveries presented in the Draft EIS are supported by the outputs from that CalSim II modeling detailed in Appendix F.
44	8	What decreases in percentage and acre-feet are considered significant?	The output of the CALSIM model was to describe changes in hydrologic conditions including reservoir storage, river flows, and water deliveries associated with each alternative evaluated in the EIS. This information was used, in part, as input into various environmental evaluations contained in the EIS including aquatics, water quality, power, etc.
44	9	How were the "less than 5%" figures calculated? [decreases in average annual deliveries to Settlement Contractors and to CVP M&I, CVP Ag and SWP M&I]	All forecasted changes in water deliveries presented in the Draft EIS were developed utilizing the CalSim II Model described in detail in Appendix F. The changes reported as less than 5% were calculated through comparisons of the predicted delivery volumes under each alternative to the delivery volumes predicted under the No Action Alternative. As is noted in Appendix H, the "CalSim II model output includes minor fluctuations of up to 5% due to model assumptions and approaches. Therefore, if quantitative changes between a specific alternative and the No Action Alternative are 5% or less, conditions under the specific alternative would be considered to be 'similar' to conditions" predicted under the No Action Alternative.
44	10	How will the losses to senior water rights claimants be calculated and allocated? Will there be hard numbers by year or will the Bureau and DWR shift the losses between contractors year-to-year?	As described in Section 3.2.2, Reclamation operates the CVP to meet its obligations to deliver water to senior water right holders who received water prior to construction of the CVP, wildlife refuge areas identified in the CVPIA,

Ltr#	Cmt#	Comment	Response
			and water service contractors. Section 3.2.4 discusses Reclamation's allocation and forecast process for its contracts. Reclamation allocates CVP water on an annual basis in accordance with contracts, which include shortage provisions when there is a constraint on the availability of water. Reclamation is not proposing to execute any new contracts or amend any existing contracts under this project. Please also see Master Response 1, Responses to General Comments regarding CVPIA obligations.
44	11	Because 5% is an average throughout the CVP and SWP, Appendix H illustrates that, for example, the Settlement Contractors may have a 10% decrease in the preferred alternative, #1 (p. H-19). This equates to a potential loss of 160,000 af each year, although that is not expressed in the DEIS. Is 160,000 af a "minor change" when the source water to compensate for such a loss is groundwater in already stressed basins rated high and medium under SGMA? [Footnote 6: DWR 2019. Statewide Map of SGMA 2019 Basin Prioritization Results. (Exhibit B [ATT 2])]	As stated in Appendix H Section H.2.4.1, forecasted changes in water deliveries to the CVP Settlement Contractors under Alternative 1 would, on an annual average, total 1,599,000 AF, which would be approximately 10,000 AF less than under the No Action Alternative. This change in delivery volume would represent a reduction of less than 5%. Appendix H presents the change in water deliveries compared to the No Action Alternative with specific delivery quantities estimated for each water user type by region. The percentage changes reported are not a system-wide change as indicated in this comment. Please also see Master Response 1, Responses to General Comments, for a general discussion regarding SGMA.
44	12	Among the senior contractors who have the most secure claims to river water, why are the Feather River contractors and the Exchange Contractors treated so lightly or not at all in the alternatives' decreases? In other words, why are the CVP Settlement Contractors treated differently from the Feather River contractors and the Exchange Contractors?	The provisions of the Reclamation's contracts specify when certain senior contractors can and cannot be subject to water shortages. Reclamation proposes to operate the CVP consistent with these contracts. Operations on the Feather River are subject to FERC licenses and are not part of the CVP's long-term operations.
44	13	Is the pressure on the CVP Settlement Contractors to accept a decrease in allocation a new and circuitous way to have groundwater substitution transfers of unlimited proportions?	Contractual requirements for deliveries and any shortage provisions are specified in the CVP Settlement Contracts. Reclamation is not proposing to amend any contracts under this project.
44	14	How will senior water claimants be compensated for their losses to junior claimants like the Bureau, DWR, and Westlands Water District?	Reclamation will comply with its contractual requirements. Please see response to comment 44-10.
44	15	CalSim II operates with the deficiency mentioned above with the data input into the model ending in 2003, which fails to account for current conditions, climate change conditions, and future conditions. The adequacy of CalSIM II has also been called into question.[Footnote 7: Close, A., et al, 2003. A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California (Exhibit C [ATT3])] Examples of CalSIM II weaknesses from Close et al. include:	Please see Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding issues related to CalSim II. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F,

Ltr#	Cmt#	Comment	Response
		• The model provides limited and inadequate coverage of non CVP or SWP water and of the California water system south of the Delta. • The model assumes that facilities, land-use, water supply contracts and regulatory requirements are constant over this period, representing a fixed level of development rather than one that varies in response to hydrologic conditions or changes over time. • Groundwater has only limited representation in CALSIM II. • Groundwater resources are assumed infinite, i.e., there is no upper limit to groundwater pumping. • The linear programming model considers only the current month, and hence CALSIM II operating rules are required to determine annual water allocations, to establish reservoir carryover storage targets, and to trigger transfers from north of Delta to south of Delta storage. • Better quality control is needed both for the model and its current version and the input data. Procedures for model calibration and verification are also needed. Currently many users are not sure of the accuracy of the results. A sensitivity and uncertainty prediction capability and analysis is needed. • Need improved ways of altering the models geographic scope and resolution and its temporal resolution to better meet the needs of various analyses and studies. • Need to improve the models comparative as well as absolute (or predictive) capabilities. • CALSIM II needs better capabilities for analyzing economic, water quality, and groundwater issues. • Need improved documentation explaining how the model works, its assumptions, its limitations, and its applicability to various planning and management issues. • DWR and USBR have not provided a centralized source of support for CALSIM II. More training for CALSIM II is needed. There is a need for more people who can run CALSIM II. There is a need for a well-publicized user group. A more extensive users guide is needed. • Improved capabilities are needed for real-time operations especially during droughts, gaming involving stakeholders during a simulation run, handling of evapotranspiration and agriculture demand changes over time, water transfers,	Modeling, Attachment 2 for additional information regarding climate change modeling.

Ltr#	Cmt#	Comment	Response
		Delta storage, carryover contract rights, refuge water demands and more up to date representation of Feather River, Stanislaus River, Upper American River, San Joaquin River and Yuba River operations. • Need an improved graphical user interface to facilitate input of model data, setting of model constraints and weights, operating the model, and displaying and post analysis of model results. • Need to be able to change the model time period durations for improved accuracy of model results. To the extent CalSim II is relied upon, the EIS must be transparent and clearly explain and justify all assumptions made in model runs. It must explicitly state when findings are based on post processing and when findings are based on direct model results. Results must include error bars to account for uncertainty and margin of safety.	
44	16	Extended Water Transfer Window The DEIS fails to provide enough material or refer a reader to another page, appendix, or appendices from which to comment. “Reclamation and DWR would continue to transfer project and nonproject water supplies through CVP and SWP facilities, including north-to-south transfers and Sacramento River north- to-north transfers. Alternative 1 would include the same volume of transfers as included in the No Action Alternative, but Reclamation and DWR would provide an extended transfer window from July 1 through November 30. Allowing fall transfers is expected to have water supply benefits and may provide flexibility to improve Sacramento River temperature operations during dry conditions, such as those that occurred during the 2014–2015 drought conditions. Quantities and timing would be similar to the transfers implemented in 2014.” The DEIS fails to provide a number for the “volume of transfers” in the quote above or refer the reader to a specific page or appendix. The DEIS fails to expand or refer the reader to an appendix on the fall transfer benefits and explain what would entail flexibility to improve Sacramento River temperature operations. The DEIS fails to provide the “quantities and timing” mentioned above that would be similar for this Project or refer the reader to an appendix. Attempting to read between the lines once again, an extended transfer window would allow more water to move from the area-of-origin in the Sacramento Valley to south of the Delta agriculture. In addition to the Project’s increased dewatering of the Sacramento River Watershed, the longer window to transfer “[w]ould lead to dewatering and potentially significant impacts to salmonid redds.” [Footnote 8: CDFW 2019. Comments on Long-Term Water	Section 3.3.5.4 provides the maximum volume of water that could be transferred July 1 and September 30 through the CVP and SWP facilities under the No Acton Alternative. As stated in Section 3.4.5.4, Alternative 1 “would include the same [maximum] volume of transfers as included in the No Action Alternative” and would “provide an extended transfer window from July 1 through November 30” to more effectively accomplish those transfers. The EIS also notes that “allowing fall transfers is expected to have water supply benefits and may provide flexibility to improve Sacramento River temperature operations during dry conditions, such as those that occurred during the 2014–2015 drought conditions” when a temporary extension to the transfer window was put in place.

Ltr#	Cmt#	Comment	Response
		Transfer Program SDEIS/RDEIR. p. 6. (Exhibit D [ATT4])] It must also be stated that if the Bureau believes that it improved temperature conditions during the 2024/2015 drought there is no end of mendacity at the agency since it destroyed salmon at devastating numbers.	
44	17	Sacramento Valley Groundwater The DEIS has only eight pages of material in the Groundwater Resources section. The document overall forces a reader to the appendices to have any details on a particular topic and groundwater is no exception. Appendix I provides some heft with 166 pages. However, there are numerous inadequacies.	Section 1502.7 of the Code of Federal Regulations calls for page limits for environmental documents. EIS documents should be 150 pages or less, unless they have a complex or unusual scope, in which case they can be up to 300 pages. This EIS is considered complex. Appendices included with the circulation of the EIS to include substantive information for the EIS analysis, as stated in Section 1502.19 of the Code of Federal Regulations. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding the sufficiency of the analysis contained in the EIS.
44	18	Groundwater Conditions The DEIS fails to openly address the consequence of declining Sacramento Valley groundwater levels. Instead, the 2019 DEIS continues propagating the Bureau's erroneous conclusions from the 2015 Coordinated Long-Term Operation of the Central Valley Project and State Water Project and many water transfer NEPA documents stating that, "Overall, the Sacramento Groundwater Basin is approximately balanced with respect to annual recharge and pumping demand." [Footnote 9: USBR 2019. DEIS Appendix I at p.I-3.] Without defining "approximately balanced," the 2019 DEIS states, just as the 2015 NEPA document did, that, "However, there are several locations showing early signs of persistent drawdown, suggesting limitations due to increased groundwater use in dry years. Locations of persistent drawdown include: Glenn County, areas near Chico in Butte County, northern Sacramento County, and portions of Yolo County." [Footnote 10: (Id.)] Unfortunately, the DEIS fails to elaborate through maps or text leaving the public without specific details regarding this serious decline in Sacramento Valley groundwater. Moreover, it is not only AquAlliance that is concerned about groundwater conditions in the Sacramento Valley. Davids Engineering stated in 2012 that, "Persistently declining groundwater levels in many areas of the Sacramento Valley over the past decade reveal that groundwater discharge exceeds recharge. Simply put: if the objective is to stem or reverse the trend, the groundwater balance must be adjusted either by putting more water into the ground or taking less out." [Footnote 11: Davids Engineering 2012. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action, p. 14.] The documentation of very serious groundwater	The groundwater analysis in Appendix I, Groundwater Technical Appendix, presents simulated changes to groundwater pumping, groundwater-surface water interaction, and groundwater levels across the Central Valley due to the four action alternatives. The tables and figures in Section I.2 provide the simulated changes in these parameters compared to the No Action Alternative, including a set of figure for each action alternative by water year type. The groundwater modeling simulates a 42-year cycle of hydrology (i.e., a combination of wetter and drier periods) representing historical water years 1962 through 2003.

Ltr#	Cmt#	Comment	Response
		conditions is also found in DWR's maps that are presented in Table 1 and by information and study (e.g., Brush 2013 and NCWA, 2014). In addition, a Glenn County farmer has experienced the effects of increased groundwater use by GCID, a district that previously solely used river water for irrigation. Prior to 2007, the aquifers were able to fully recharge with an average rainfall year. GCID began large scale groundwater pumping in 2007 and continued until July 2015. Although this pumping was ostensibly limited to the 950'--1200' deep (Tuscan) aquifer, the three overlying aquifer strata at ±600', 300' and 100' have all been affected, and remain compromised. The ranches I operate for my family and friends rely on 19 groundwater wells. Since 2011-- 2012 several of these wells have shown abnormal and erratic behavior. Our pump 19 went completely dry on July 19, 2014. In the years since, three important wells have become unusable for several days at a time… The extremely rapid draw down when these pumps are turned on, appears to be a significant factor in a new occurance [sic] for our area subsidence. New cracks in two of my brick houses that are both built on heavy foundations began to appear after 2007. They are getting more serious with time… The responsibility for proving damage under this system leaves the average landowner at a severe disadvantage, and I don't believe this is what the law intends. The unraveling of small groundwater dependent farms is a very significant issue that they want to prevent, not mitigate. I have just replaced one of three wells that have failed since this all began. I hoped that the cessation of GCID pumping would allow the main ag and domestic levels to recover enough for them to be useable. Even with above average rainfall in the past 3 years, they have not. I will be out a half million dollars, just on these three replacements. And still have 15 other wells to worry about. [Footnote 12: Billiou, Michael 2019. Comments on the Long-Term Transfer SDEIS/RDEIR. (Exhibit E [ATT5])] Appendix I [Exhibit 1] should also have more completely disclosed current groundwater conditions as we provide in Table 1 (based on DWR's maps). [Footnote 13: DWR. https://data.cnra.ca.gov/dataset/northern-sacramento-valley-groundwater-elevation-change-maps] What is also missing from the DEIS is what these trends look like over a longer period of time. One example is Butte County where declines are not as severe as Glenn and Colusa counties, yet Exhibit A [Footnote 14: Butte County 2019. Spring 2008-2019	

Ltr#	Cmt#	Comment	Response
		Groundwater Elevations – CASGEM.] demonstrates how despite some very wet years, Sacramento Valley water is not recovering as the DEIS is wont to claim when viewed over a dozen years. Many wells in BMO Alert Stages remain there.	
44	19	The DEIS's conclusory statements that the proposed Project will satiate the demand for water and therefore stem the decline of groundwater is unsupported by facts or history. "Overall, surface water supplies to the CVP and SWP service areas are expected to increase. Given an increase in the supply of surface water, the amount of groundwater pumping would likely remain unchanged or decrease compared to the No Action Alternative." [Footnote 15: USBR 2019. DEIS Revisions to the Coordinated Long-Term Operation of the Central Valley Project and State Water Project. p. 5-26.] The lead agency must provide extensive and current examples that demonstrate when and where groundwater pumping has declined. If this was actually the case, what is the need for the Project? It is clear to AquAlliance that demand for water only increases in California and the Project itself serves to confirm this.	Appendix I, Groundwater Technical Appendix, provides groundwater modeling results for simulated changes in groundwater pumping for each of the action alternatives as compared to the No Action Alternative. Tables I.2-1 and I.2-2 present a comparison of the average annual pumping for each of the 42 years of the USGS's Central Valley Hydrologic Model's simulation period. The simulation results presented represent the conditions if an action alternative was in place during this range of historical wet/dry conditions. Alternatives 1, 2, and 3 show less pumping than in the No Action Alternative. The pumping in Alternative 4 is slightly increased above the No Action Alternative. Figures I.2-26 through I.2-69 present the change in groundwater levels resulting from the simulation of the action alternatives as compared to the No Action Alternative.
44	20	It is refreshing that Appendix I discusses the groundwater basins in the Sacramento Valley at all, but the DEIS fails to provide basic material, such as: • Maps of groundwater basins and subbasins. • Discussion of serious declines over time. The DEIS's deficit in information regarding direct and indirect impacts to groundwater in the areas-of origin and the receiving areas results in a conclusion that "No mitigation measures are identified for the effects acknowledged in this appendix." (p. I-133) The potential loss of 160,000 af to CVP Settlement Contractors alone requires a conclusion of "significant impact" and the proposal of mitigation measures. Revisions to the DEIS must also be made to clarify how conclusions were reached.	See response to comment 44-19.
44	21	[Exhibit 1: Table 1. Northern Sacramento Groundwater Changes]	See response to comment 44-19.
44	22	Conjunctive Use Conjunctive water use ("CWU") of surface and groundwater (also known as groundwater substitution transfers) by Sacramento Valley water districts contributes to declining groundwater. Historic, independent groundwater pumpers may be economically injured by declining aquifer levels. "While conjunctive use may prove successful for an individual or group of water users to manage an immediate situation, it is also possible for conjunctive use to unintentionally harm the groundwater basin and other groundwater users who	Appendix D presents the alternatives development process and components included in each alternative. Conjunctive water use was not included as a component of the action alternatives. Groundwater substitution transfers are also not discussed a component of the action alternatives. The figures showing the simulated change in groundwater levels across the Central Valley presented in Appendix I present an average of less than 2 feet of groundwater level decline in the Sacramento Valley and groundwater level increases in San Joaquin Valley.

Ltr#	Cmt#	Comment	Response
		are not involved in conjunctive use but are reliant on the same groundwater basin." [Footnote 16: Dudley, Toccoy and Allan Fulton, 2005. Conjunctive Water Management: What Is It? Why Consider It? What are the Challenges? https://www.buttecounty.net/Portals/26/Education/second1.pdf] If CWU is considered as any part of the Project or its alternatives, the DEIS must identify areas where communities, farms, residential wells, and groundwater dependent ecosystems ("GDE") may be impacted by CWU. "In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain GDE species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations." [Footnote 17: McManus, Dan (DWR) et al 2007. Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework. pp. 5-6]	
44	23	Sustainable Groundwater Management Act of California Under the Sustainable Groundwater Management Act, critically over-drafted basins must come up with a Groundwater Sustainability Plan ("GSP") by January 30, 2020. In the Sacramento Valley with medium- to high-priority basins, the GSPs must be developed by January 31, 2022 and achieve sustainability within 20 years. DWR will not finish reviewing all of the GSPs until 2024. The Bureau's Project timing is problematic. At minimum, over-drafted basins must have an opportunity to create plans without including whatever additional surface water the Bureau proposes to make available. To do otherwise may result in a GSP for one region that would intensify unsustainable water transfers in another. A conservative approach would dictate that no major revisions to CVP and SWP water operations take place until DWR has an opportunity to review all of the GSPs.	Refer to Master Response 1, Response to General Comments, regarding the Sustainable Groundwater Management Act.
44	24	Sacramento Valley Groundwater Impact Analysis The Bureau's modeling and existing conditions data are seriously deficient. None-the-less, the DEIS asserts on page 5-19: As discussed in Section 5.3, Surface Water Supply, CVP and SWP water deliveries under Alternatives 1 through 4 would have small changes in th Sacramento Valley. Deliveries to CVP agricultural service contractors would increase, but other deliveries would be essentially unchanged. Changes in	Appendix D presents the alternatives development process and components included in each alternative. Groundwater substitution transfers are not a component of the action alternatives. Table I.2-1 shows the simulated groundwater pumping in the Central Valley under the No Action Alternative and the four action alternatives. Table I.2-2 shows the change in pumping for each of the action alternatives versus the No Action Alternative.

Ltr#	Cmt#	Comment	Response
		deliveries associated with Alternatives 1 through 4 would not likely affect groundwater pumping or groundwater levels in the Sacramento Valley. Even if the DEIS's conclusion of less than a 5% loss to Sacramento Valley users is accurate, how much water does that actually involve and in what region/groundwater basin? Is this a new and circuitous way to have a groundwater substitution transfer of unlimited proportions somewhere between one and two MAF?	
44	25	Impacts to Native Tribes The DEIS must evaluate the impacts to indigenous people in the Project's geography who have been deprived of their abundant supply of numerous salmon runs, destruction of sacred sites, and destruction and disruption of food, fiber, and cultural sites disrupted by CVP/SWP infrastructure. The DEIS must examine an alternative that facilitates the return of spawning salmon in the McCloud River. The DEIS must consider the cultural ramifications of raising Shasta Dam. There are culturally sensitive sites that will be flooded if the dam is raised. These places are the last remaining sacred sites of the Winnemem Wintu people. [Footnote 18: Sisk, Caleen 2017. Personal Communication.]	Please see Master Response 4, Alternatives Formulation regarding the adequacy of the range of alternatives evaluated. Please also see Master Response 7, Aquatic Resources regarding the analysis of potential impacts to aquatic resources. Appendix K, Cultural Resources and Indian Sacred Sites Technical Appendix of this EIS provides the technical analysis to support the impact analysis provided in Chapter 5, Environmental Consequences of the EIS. As described in Appendix Y, Cumulative Methodology, Shasta Dam Lake Water Resources Investigation was appropriately considered in the cumulative effects evaluation which is also provided in Chapter 5. This EIS evaluates proposed operations, the concerns raised in this comment related to the proposal to raise Shasta Dam are beyond the scope of this EIS. No further response is required..
44	26	Impacts to the Upstream Watershed The DEIS must analyze how the inflow of fresh water drives the health of the Central Valley watershed. The elimination of the majority of spawning anadromous fish is depriving riparian corridors, agricultural land and forested watersheds of marine derived nutrients. "Pacific salmon transfer large quantities of marine-derived nutrients to adjacent forest ecosystems with profound effects on plant and wildlife production…These data suggest that robust salmon runs continue to provide important ecological services with high economic value, even in impaired watersheds. Loss of Pacific salmon can not only negatively affect stream and riparian ecosystem function, but can also affect local economies where agriculture and salmon streams coexist." [Footnote 19: Merz, Joseph E., et al. 2006. Salmon, Wildlife, and Wine: Marine-Derived Nutrients in Human-Dominated Ecosystems of Central California. https://pdfs.semanticscholar.org/1342/ce8aa20421c8531c7466bdb2a64bc60cc774.pdf] The DEIS must include historic details and charts regarding what has happened to fish and other species from past and current operations of the two projects – the CVP (Shasta) and the SWP (Oroville).	The commenter's description of the importance of salmonids' role in nutrient transfer between marine, riverine, and terrestrial ecosystems is noted. Please refer to the following portions of the EIS for details on the analyses of project effects on flows and impacts or benefits anticipated to aquatic resources: Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources; Appendix O, Section O.3, Evaluation of Alternatives; and Appendix F, Modeling. Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. Please refer to Master Response 1, Responses to General Comments, regarding requirements of the NEPA analysis and process. Also see Master Response 5, Adequacy of Analysis and Mitigation, for response to comments generally requesting additional detail in analyses. Regarding the commenter's request to address impacts to aquatic resources with respect to past and current operations of the CVP and SWP, please see Master Response 3, Baseline and No Action, regarding the sufficiency and adequacy of the baseline used in the NEPA analysis. Refer to Chapter 3,

Ltr#	Cmt#	Comment	Response
			Alternatives, Section 3.3, No Action Alternative, for description of the No Action Alternative under which Reclamation would continue with current CVP operation in coordination with DWR's SWP operation. See Appendix O, Section O.2, Background Information, for description of fish and aquatic resources that could be affected by implementation of the alternatives considered in the EIS. Also see Section O.3.2, No Action Alternative, specifically Section O.3.2.4., Feather River, regarding past effects of Oroville dam on stream flows and salmonids. See Chapter 5, Environmental Consequences, Section 5.9, Aquatic Resources, for description of project- and program-level effects anticipated to aquatic resources, including under the No Action Alternative.
44	27	Streamflow depletion must be disclosed and analyzed. The CVP and SWP have extended water far from the areas of origin for agricultural, urban, and industrial uses. In so doing, particularly with paper water, as discussed further below, the state and federal governments have facilitated a destructively unrealistic demand for water. Ever willing to destroy natural systems to meet demand for profit, the San Joaquin River dried up and subsidence caused by groundwater depletion in the San Joaquin Valley is even cracking water conveyance facilities. [Footnote 20: Sneed, et al., 2012. Abstract: Renewed Rapid Subsidence in the San Joaquin Valley, California. "The location and magnitude of land subsidence during 2006–10 in parts of the SJV were determined by using an integration of Interferometric Synthetic Aperture Radar (InSAR), Global Positioning System (GPS), and borehole extensometer techniques. Results of the InSAR measurements indicate that a 3,200-km2 area was affected by at least 20 mm of subsidence during 2008–10, with a localized maximum subsidence of at least 540 mm. Furthermore, InSAR results indicate subsidence rates doubled during 2008. Results of a comparison of GPS, extensometer, and groundwater-level data suggest that most of the compaction occurred in the deep aquifer system, that the critical head in some parts of the deep system was exceeded in 2008, and that the subsidence measured during 2008–10 was largely permanent." Conference presentation at Water for Seven Generations: Will California Prepare For It?, Chico, CA.] Enter conjunctive use where the Agencies facilitate and their contractors implement river water sales and pump groundwater to continue crop production. The continual, long-term groundwater overdraft in the San Joaquin Valley, the expansion of new permanent crops in both the San Joaquin and Sacramento valleys, and groundwater substitution transfers by CVP and SWP contractors all cause streamflow depletion. The current state of streamflow depletion in the	Surface water – groundwater interactions, resulting from changes to CVP and SWP operations, are discussion in Section 5.4 Groundwater Resources and Appendix I Groundwater Technical Appendix.

Ltr#	Cmt#	Comment	Response
		Sacramento River basin and how the CVP and SWP cause streamflow depletion must be disclosed in a recirculated DEIS or it must be withdrawn.	
44	28	Freshwater Flow to the Ocean Sustains the San Francisco Bay The DEIS must consider how water diversions create artificial, super critically dry years in the San Francisco Bay. This analysis must consider the following: • How will dry years shift the size and location of the ecologically important salinity mixing zone? • How will water diversions divert the inflow of nutrients, food, and sediment from the watershed that are vital components of fish and wildlife habitat? • How will decreased flows prevent periodic flushing and allow pollutants to persist? How will reduced flows facilitate invasions by undesirable non-native species? [Footnote 21: The Bay Institute, 2016. San Francisco Bay; The Freshwater-Starved Estuary. How Water Flowing to the Ocean Sustains California's Greatest Aquatic Ecosystem. https://bayecotarium.org/wp-content/uploads/freshwater_report.pdf. p. 10.]	Potential effects of the alternatives on water quality, aquatic resources, and terrestrial biological resources are all summarized in Chapter 5 and evaluated in detail in their respective resource appendix.
44	29	The DEIS must analyze how the dams and diversions have prevented sediment from flowing into the Bay Estuary depriving the Bay and the down current ocean beaches of sand needed to sustain the existence of sandy beaches. The DEIS must consider the role of sediment transport as a means of dealing with rising sea levels. Marsh formation is a critical tool in dealing with rising sea levels. The DEIS must examine the role of how freshwater flow regimes in the estuary facilitates the preservation and growth of freshwater marshes in response to rising sea levels. According to The Bay Institute, "Organic matter accumulates faster in freshwater marshes than it does in saltwater marshes. Wetlands and beaches act as natural flood barriers to protect shoreline communities in the Bay Area." [Footnote 22: (Id.)]	Sediment impacts are discussed in Section 5.2 Water Quality and Appendix G Water Quality Technical Appendix.
44	30	Biological Resources The DEIS asserts on page 2-2 that many factors cause the devastating decline of California's fisheries while omitting the primary culprit: exports. The paragraph begins with what appears to be a complaint about restrictions on the CVP and SWP ("Projects"). "These requirements and projects [D- 1485, 1992 CVPIA amendments, D-1641, Bay-Delta Plan amendments flows for the lower San Joaquin River and revised southern Delta salinity objectives, and the Trinity ROD] have constrained the operation of the CVP and SWP, and the	Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS. Please see Chapter 5, Environmental Consequences, where the EIS identifies environmental consequences of the No Action Alternative and action alternatives on 18 resource categories, including Aquatic Resources (Section

Ltr#	Cmt#	Comment	Response
		RPAs in the 2008 USFWS and 2009 NMFS BOs added additional restrictions (as described above).” (emphasis added) However, even with constraints, the Projects have consistently ignored the law or asked for waivers or forgiveness, while using every available tactic to increase exports, which state and federal agencies repeatedly allowed. The DEIS callously continues stating that, “At the same time, California native fishes have declined and are likely to continue to decline because of stressors such as long-term meteorological variability, sea level rise, extreme weather events, predation, and ecosystem changes caused by nonnative species. Reclamation requested reinitiation of consultation based on new information based on multiple years of drought, monitoring of listed fish populations, and new information available as a result of ongoing scientific processes.” p. 2-2. The CVP and SWP violations of D-1641, the ESA, CESA, and the Public Trust Doctrine are obvious, yet there is no sign in the DEIS of responsibility for the impacts to all manner of species and people from CVP and SWP operations.	5.9) and mitigation measures for direct and indirect impacts and cumulative impacts. Also refer to Appendix O, Aquatic Resources Technical Appendix, which describes the fish and aquatic resources that occur in the portions of the project area that could be affected as a result of implementing the alternatives evaluated in the EIS. Appendix O, Section O.3, Evaluation of Alternatives, describes how implementation of the alternatives could affect aquatic resources through changes in ecological attributes as a result of potential changes in long-term operation of the Central Valley Project (CVP) and State Water Project (SWP) and ecosystem restoration.
44	31	Intersection with the California Environmental Quality Act AquAlliance inquired about the nexus between the California Environmental Quality Act (“CEQA”) and the NEPA process at the Bureau’s scoping meeting in Chico on January 25, 2018. A clear answer was not provided, only an ambiguous thought that the operator of the SWP, DWR, needed more information about the Project to determine if it triggered CEQA. This is understandable considering the vacuous description of the project in the NOI as noted above; however, it leaves the public at a loss regarding the NEPA and CEQA processes. The relationship of the CVP and SWP and their coordinated operations, which is in the NOI title and noted repeatedly in the NOI, must be clarified in detail in the DEIS.	Please see Master Response 1, General Comments, for more information about the preparation of this document under the National Environmental Policy Act.
44	32	Limited Range of Alternatives The DEIS fails to evaluate a reasonable range of alternatives as required by NEPA. None of the alternatives presented will achieve the CVP’s legal obligations regarding fish and wildlife protection, restoration and mitigation, compliance with state water quality standards, and complying with the ESA. This is especially problematic in light of the fact that coordinated operations of the CVP and SWP have: • Exceeded incidental take limits under the existing biological opinions. • Failed to reinitiate consultation that other federal agencies stated was required.	Please see Master Response 5, Adequacy of Analysis and Alternatives, and Master Response 4, Alternatives Formulation, regarding the range of alternatives analyzed in this EIS.

Ltr#	Cmt#	Comment	Response
		• Failed to prevent continued declines of listed species and caused additional harm by operations not considered in the existing biological opinions. It is regrettable that the Bureau failed to consider alternatives offered by AquAlliance in our scoping comments. This illustrates the continuing intractability of the lead agency in planning to deal with the multitude of negative impacts from the operation of the CVP and its partner SWP for numerous decades coupled with increased climate impacts to water in California.	
44	33	Watershed Rehabilitation as Storage The DEIS should have evaluated alternatives that include Sierra/Cascade watershed management that rehabilitates mountain meadow and restores wildlands into the fire-evolved ecosystem. Natural fire regimes restore forest structure that reduces small diameter ladder fuel and enhances precipitation percolation. Degraded mountain meadows release runoff while healthy meadows holds and slowly releases water in storage. "Meadows are also important for water storage and habitat connectivity, providing California with water to sustain its ever-growing population and agricultural endeavors. Promoting the restoration of mountain meadows is critical for supplying our state with enough water to grow and habitat for the plant and animal species that we cherish." [Footnote 23: Earthwatch Institute, 2017, Restoring Sierra Meadows: The Source of California's Water. p. 1. http://earthwatch.org/briefings/web-teen-earthwatch-restoring-sierra-meadows-the-source-of-californias-water-2017.pdf]	As discussed in Appendix D, Reclamation considers the project scope to be focused on flexibility for maximizing water deliveries and managing listed species through operational changes to the CVP and SWP. The issue of watershed rehabilitation as storage is beyond the scope of the EIS because it is not an operational change. This issue is specifically mentioned in Appendix D, Section 3.1, as a potential component that was screened out of alternatives formulation.
44	34	Decreased Demand Alternative The DEIS should have evaluated an alternative that would focus on reduction of water demand that is in keeping with the Bureau's junior water claims status in an over-subscribed system - 120.6 MAF that is 5.6 times more claims than there is available water. [Footnote 24: California Water Impact Network, AquAlliance, and California Sportfishing Protection Alliance 2012. Testimony on Water Availability Analysis for Trinity, Sacramento, and San Joaquin River Basins Tributary to the Bay-Delta Estuary.] A decreased demand alternative would include elements such as: • Expanding agricultural and urban conservation. • Retiring contaminated lands. There are approximately 1 million acres of irrigated land in the San Joaquin Valley and the Tulare Lake Basin tainted with salts and trace metals like selenium, boron, arsenic, and mercury. This water	Increased water efficiency for agricultural and municipal water users is included as a component of Alternative 4. As described in Appendix D Section 3.1, land retirement was considered as a potential component of the alternatives, but was not moved forward for further evaluation because it does not meet the project's purpose and need of increasing water deliveries or benefiting listed species. Please see Master Response 4, Alternatives Formulation for additional information.

Ltr#	Cmt#	Comment	Response
		drains back—after leaching from these soils the salts and trace metals—into sloughs and wetlands and the San Joaquin River, carrying along these pollutants. Retirement of these lands from irrigation usage would stop wasteful use of precious fresh water resources and help stem further bioaccumulation of these toxins that have settled in the sediments of these water bodies. The Lead and Approving Agencies have known about this massive pollution of soil and water in the area of demand for over three decades. [Footnote 25: http://www.usbr.gov/mp/cvpia/3408h/] Whether or not this is a preference for contractors, this pragmatic element should be fully explored.	
44	35	Reduced Dependence on Water Imported From the Delta The DEIS also failed to provide an alternative that honors California Water Code Section 85021 that requires all regions of California reduce their dependence on water imported from the Delta. “The policy of the State of California is to reduce reliance on the Delta in meeting California’s future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts.” [Footnote 26: California Water Code. DIVISION 35. SACRAMENTO-SAN JOAQUIN DELTA REFORM ACT OF 2009 [85000 - 85350] (Division 35 added by Stats. 2009, 7th Ex. Sess., Ch. 5, Sec. 39.) https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=WAT&division=35.&title=&part=1.&chapter=2.&article=]	Please see Master Response 1, Response to General Comments, regarding the Delta Reform Act and applicability to this project.
44	36	The DEIR Fails to Adequately Analyze Numerous Cumulative Impacts. As discussed above, the Project is dependent on the hydrology of the Sacramento River and Delta watersheds to implement the proposed Project. The cumulative impact analysis is abysmal as it fails to consider many past, present and reasonably foreseeable future actions in the Delta watersheds. Whether this was done through the Bureau’s screening process or by deferring analysis to a future day, the cumulative analysis fails. The Ninth Circuit has made clear that NEPA mandates “a useful analysis of the cumulative impacts of past, present and future projects.” Muckleshoot Indian Tribe v. U.S. Forest Service, 177 F.3d 800, 810 (9th Cir. 1999). Indeed, “[d]etail is required in describing the cumulative effects of a proposed action with other proposed	Please refer to Master Response 7, Aquatic Resources, and Master Response 5, Adequacy of Analysis and Mitigation, regarding the sufficiency of the Draft EIS impact analyses and conclusions, including discussions of the use of best available science and NEPA requirements regarding impact determinations.

Ltr#	Cmt#	Comment	Response
		actions." Id. The obvious omissions in the cumulative effects discussion contained in the DEIS plainly fails to meet this standard.	
44	37	In assessing the significance of a project's impact, Reclamation must consider "[c]umulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement." 40 C.F.R. §1508.25(a)(2). A "cumulative impact" includes "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Id. §1508.7. The regulations warn that "[s]ignificance cannot be avoided by terming an action temporary or by breaking it down into small component parts." Id. §1508.27(b)(7). An environmental impact statement should also consider "[c]onnected actions." Id. §1508.25(a)(1). Actions are connected where they "[a]re interdependent parts of a larger action and depend on the larger action for their justification." Id. §1508.25(a)(1)(iii). Further, an environmental impact statement should consider "[s]imilar actions, which when viewed together with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." Id. §1508.25(a)(3) The DEIS fails to comport with these standards for cumulative impacts upon surface water and groundwater supplies, subsidence, vegetation, and biological resources. The baseline and modeling data (WY 1970-2003) relied upon by the DEIS do not account for related transfer projects since the CalFed ROD was signed in 2000 and transfer accelerated.	This is a general comment on the requirements of NEPA for cumulative impacts and connected actions expressing the general opinion that NEPA standards are not met. The commenter is referred to Section 5.20 of the Draft EIS and Appendix Y for cumulative analyses determined to be relevant for Alternative 1 and alternatives. Cumulative effects on water quality, surface water supply, groundwater and aquatic resources among other resources are addressed in Sections 5.20.1, 5.20.2, 5.20.3 and 5.20.9. Regarding connected actions, no indication of what connected actions could apply to Alternative 1 and alternatives is identified. Because Alternative 1 and alternatives address operational changes to regional water supply projects whose operations are interconnected not further discussion of connected actions is warranted.
44	38	The Cumulative Methodology Lacks Clarity Appendix Y, Cumulative Methodology, contains a brief introduction before it enumerates projects that passed a screening process. It is unclear what criteria were used to formulate the table that contains headings Water Supply and Water Quality Projects and Actions (19 projects); Future Water Supply Projects (23 projects); Ecosystem Improvement Projects and Actions(120 projects); and Other Projects (8 projects). The process used must be delineated and provided to the public. In addition, the narrative on page Y-1 states that "[r]eferences to where project documentation may be located" are provided in the table. AquAlliance does not find these references and would appreciate knowing where they are located or have the DEIS corrected.	Additional detail regarding the cumulative impacts methodology has been added to the Section 5.20 and Appendix Y.

Ltr#	Cmt#	Comment	Response
44	39	The Cumulative Impact Analysis Is Vacuous Modeling Data used for modeling the Project appears to end in 2003. “1. Long Term is the average quantity for the period of Oct 1921 - Sep 2003.” “2. Dry and Critical Years Average is the average quantity for the combination of the SWRCB D-1641 40-30-30 Dry and Critical years for the period of Oct 1921 – Sep 2003.” These dates and explanatory language are replete throughout the appendices that are intended for cumulative impact analysis. The Bureau’s failure to use more up-to-date data on conditions and activities after 2003 is a significant limitation on the utility of the model for estimating potentially significant impacts. For example, baseline conditions in the Sacramento Valley groundwater basin have changed significantly since 2003 including continued dramatic localized decreases in groundwater levels, decreases in water quality, and the expansion of subsidence. “The decrease in groundwater levels and quality has resulted in the many of the Sacramento Valley groundwater subbasins being listed as medium to high priority under SGMA. These subbasins are considered unsustainable under current conditions, and therefore require management under a Groundwater Sustainability Plan. The modeling effort doesn’t appear to account for the causes of the SGMA ranking or clearly address the potential for creating or expanding any SGMA undesirable results.” [Footnote 27: Custis, Kit. 2019. Comments on the Long-Term Water Transfers. p. 6. (Exhibit F [ATT6])] The failure to utilize more current data in the modeling for the Project by itself makes the DEIS meaningless.	See Master Response 5, Adequacy of Analysis and Mitigation, regarding the use of best available science and cumulative analysis. Regarding the groundwater analysis, the date ranges listed in this response are the accurate simulation periods for the CalSIM II model (1921-2003) the CVHM groundwater model (1962-2003). These models represent simulation of cycles of historically drier and wetter periods. The groundwater modeling results in Appendix I, Groundwater Technical Appendix, provide the simulated change in groundwater pumping, groundwater-surface water interaction, and groundwater levels during this historic hydrology. As Groundwater Sustainability Plans are developed under the Sustainable Groundwater Management Act, the conditions of the groundwater basins, including any potential implementation of the action alternatives, will need to be addressed by the appropriate Groundwater Sustainability Agencies.
44	40	Recently Past, Current, and Future Transfers are Not Disclosed. The DEIS has deprived the public of knowledge or connection to recent supply projects that include river water transfers that may involve groundwater substitution transfer pumping. Below is a list of transfers from the recent past that at a minimum should have been considered in the DEIS. 1. 2009. The Bureau approved a one-year water transfer program under which a number of transfers occurred. Regarding NEPA, the Bureau issued a FONSI based on an EA. 2. 2010-2011. The Bureau approved a two-year water transfer program. No actual transfers occurred under this approval. Regarding NEPA, the Bureau again issued a FONSI based on an EA.	The CALSIM modeling used to support resource analyses in the Draft EIS incorporates historical water management practices (1922 -2003) including past water transfers that approximate these effects combined with overall system operations. While more recent water transfers were not included in the modeling. The transfers that have occurred during the years modeled are expected to reasonably approximate the effects of water transfers during the historical period used for CALSIM II modeling. Please also refer to Appendix F (page 7), Modeling for additional information on limitations for the modeled water transfer assumptions.

Ltr#	Cmt#	Comment	Response
		3. 2012. Settlement contractors in the Sacramento Valley received 100% of their allocation. The Bureau planned 2012 water transfers of 76,000 AF of CVP water all through groundwater substitution, but it is unclear if CVP transfers occurred. [Footnote 28: USBR 2012. Memo to the Deputy Assistant Supervisor, Endangered Species Division, Fish and Wildlife Office, Sacramento, California regarding Section 7 Consultation.] SWP contractors and the Yuba County Water Agency ("YCWA") did transfer water and the cumulative total transferred is stated to be 190,000 af. [Footnote 29: Western Canal Water District, 2015. Initial Study and Proposed Negative Declaration for Western Canal Water District 2015 Water Transfer Program. (p. 21)] 4. 2013. WY – Dry. Settlement contractors in the Sacramento Valley received 100% of their allocation. The Bureau approved a 1-year water transfer program, again issuing a FONSI based on an EA. The EA incorporated by reference the environmental analysis in the 2010-2011 EA. The 2013 Water Transfer Program proposed the direct extraction of up to 37,505 AF of groundwater (pp. 8, 9, 11, 28, 29, 35), the indirect extraction of 92,806 AF of groundwater (p. 31), and the cumulative total of 190,906 (p. 29). [Footnote 30: USBR, 2013. Draft Environmental Assessment and Findings of No Significant Impact for the 2013 Water Transfers. (p. 29)] Reported transfers amounted to 210,000 af. [Footnote 31: Western Canal Water District, 2015. Initial Study and Proposed Negative Declaration for Western Canal Water District 2015 Water Transfer Program. (p. 21)] 5. 2014. Federal Settlement Contractors in the Sacramento Valley received 75% and State Settlement Contractors received 100% of their allocations. Total maximum proposed northto- south transfers were 378,733 af and total maximum proposed north-to-north transfers were 295,924 af. [Footnote 32: AquAlliance, 2014. 2014 Sacramento Valley Water Transfers. (Data from: 1) USBR, 2014 EA for 2014 Tehama-Colusa Canal Authority Water Transfers; 2) USBR and SLDMWA, 2014. EA/Negative Declaration, 2014 San Luis & Delta Mendota Water Authority Transfers.)] Reported north-to-south transfers amounted to 198,000 af. [Footnote 33: Western Canal Water District, 2015. Initial Study and Proposed Negative Declaration for Western Canal Water District 2015 Water Transfer Program. (p. 21)] 6. 2015-2024. The Bureau and SLDMWA approved the FEIS/EIR for the 10-Year Water	

Ltr#	Cmt#	Comment	Response
		Transfer Program (aka Long-Term Water Transfers) with the ability to transfer up to 600,000 af per year, however, the FEIS/EIR was vacated in 2018. No water was transferred under this program. 7. 2016-2020. The Bureau's Accelerated Water Transfer and Exchange Program for Sacramento Valley Central Valley Project Contractors – Contract Years 2016-2020 may transfer up to 150,000 acre-feet among Central Valley Project contractors for "[i]rrigation, incidental domestic use, M&I use, groundwater recharge, and/or maintenance of habitat and habitat conditions for fish and wildlife resources." 8. 2018-2024. The Western Canal Water District and Richvale Irrigation District Water approved a project that may transfer up to 60,000 af per year to south of the Delta. 9. 2018-2023. 5-year Warren Act Contracts for CVP water service contractors within the Sacramento Canals Unit to convey groundwater in Federal facilities. 10. 2018-2024. The Bureau and SLDMWA circulated a SDEIS/RDEIR for a 6-Year Water Transfer Program (aka Long-Term Water Transfers) that plans to transfer up to 600,000 af per year.	
44	41	Yuba Accord The Yuba River is the major tributary to the Feather River. However, the role of the Yuba Accord is not presented in any way. The relationship between the federal and state Agencies seeking or facilitating transfer water it is illuminated in a 2013 Environmental Assessment. "The Lower Yuba River Accord (Yuba Accord) provides supplemental dry year water supplies to state and Federal water contractors under a Water Purchase Agreement between the Yuba County Water Agency and the California Department of Water Resources (DWR). Subsequent to the execution of the Yuba Accord Water Purchase Agreement, DWR and The San Luis & Delta- Mendota Water Authority (Authority) entered into an agreement for the supply and conveyance of Yuba Accord water, to benefit nine of the Authority's member districts (Member Districts) that are SOD [south of Delta] CVP water service contractors." [Footnote 34: Bureau of Reclamation, 2013. Storage, Conveyance, or Exchange of Yuba Accord Water in Federal Facilities for South of Delta Central Valley Project Contractors.]	The Lower Yuba River Accord is considered in relevant cumulative analyses and is listed and described in Appendix Y of the Draft EIS. Requirements of the lower Yuba River accord are also incorporated into the No Action and Action alternatives analyses. Please refer to Chapter 5, Environmental Consequences and Appendix F, Modeling.

Ltr#	Cmt#	Comment	Response
		In a Fact Sheet produced by the Bureau, it provides some numerical context and more of DWR's involvement by stating, "Under the Lower Yuba River Accord, up to 70,000 acre-feet can be purchased by SLDMWA members annually from DWR. This water must be conveyed through the federal and/or state pumping plants in coordination with Reclamation and DWR. Because of conveyance losses, the amount of Yuba Accord water delivered to SLDMWA members is reduced by approximately 25 percent to approximately 52,500 acre-feet. Although Reclamation is not a signatory to the Yuba Accord, water conveyed to CVP contractors is treated as if it were Project water." [Footnote 35: Bureau of Reclamation, 2013. Central Valley Project (CVP) Water Transfer Program Fact Sheet.] However, the Yuba County Water Agency ("YCWA") may transfer up to 200,000 under Corrected Order WR 2008-0014 for Long-Term Transfer and, "In any year, up to 120,000 af of the potential 200,000 af transfer total may consist of groundwater substitution. (YCWA-1, Appendix B, p. B-97.)." [Footnote 36: State Water Resources Control Board, 2008. ORDER WR 2008 – 0025] Potential cumulative impacts from the Project and the YCWA Long-Term Transfer Program from 2008 -2025 are not disclosed or analyzed in the DEIS. As mentioned above, the 2018-2024 Water Transfer Program could transfer up to 600,000 af per year through the same period that the YCWA Long-Term Transfers are potentially sending 200,000 af into and south of the Delta. How these two projects operate simultaneously could have a very significant impact on the environment and economy of the Feather River and Yuba River's watersheds and counties as well as the Delta is not any part of the Project's DEIR. The involvement of Browns Valley Irrigation District and Cordua Irrigation District in both long-term water transfer programs must also be considered. If the Project is not withdrawn, the Yuba Accord and other Yuba River water transfers' cumulative impacts must be analyzed and presented to the public in a revised draft DEIS. Also not available in the DEIS is disclosure of any issues associated with the Yuba River transfers that have usually been touted as a model of success. The Yuba County Water Agency ("YCWA") transfers have encountered troubling trends for over a decade that, according to the draft Environmental Water Account's EIS/EIR, were mitigated by deepening domestic wells (2003 p. 6-81). While digging deeper wells is at least a response to an impact, it hardly serves as a proactive measure to avoid impacts. Additional information finds that it may take 3-4 years to recover from groundwater substitution in the south sub-basin [Footnote 37: 2012. The Yuba Accord, GW Substitutions and the	

Ltr#	Cmt#	Comment	Response
		Yuba Basin. Presentation to the Accord Technical Committee. (pp. 21, 22).] although YCWA's own analysis fails to determine how much river water is sacrificed to achieve the multi-year recharge rate. None of this is found in the DEIS. What was found in the 2015-2024 Water Transfer Program's environmental review is that even the inadequate SACFEM2013 modeling reveals that it could take more than six years in the Cordua ID area to recover from multi-year transfer events, although recovery was not defined (pp, 3.3-69 to 3.3-70). This is a very significant impact that is not addressed cumulatively in the DEIS.	
44	42	Other Projects Projects with cumulative impacts upon groundwater and surface water resources affected by the proposed project: 1. The DWR Dry Year Purchase Agreement for Yuba County Water Agency water transfers from 2015-2025 to SLDMWA. [Footnote 38: SLDMWA Resolution # 2014 386 http://www.sldmwa.org/OHTDocs/pdf_documents/Meetings/Board/Prepacket/2014_1106_Board_PrePacket.pdf] 2. Installation of numerous production wells by water districts that sell water, many with the use of public funds such as Butte Water District, [Footnote 39: Prop 13. Ground water storage program: 2003-2004 Develop two production wells and a monitoring program to track changes in ground.] GCID, Anderson Cottonwood Irrigation District, [Footnote 40: "The ACID Groundwater Production Element Project includes the installation of two groundwater wells to supplement existing district surface water and groundwater supplies." http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=8081] RD108, and Yuba County Water Authority, [Footnote 41: Prop 13. Ground water storage program 2000-2001: Install eight wells in the Yuba-South Basin to improve water supply reliability for in-basin needs and provide greater flexibility in the operation of the surface water management facilities. $1,500,00;] among others.	The comment lists projects to potentially be considered in the cumulative impacts analyses for effects on surface and groundwater resources. In general Alternatives 1-3 would increase surface water supplies and reduce reliance on groundwater pumping as disclosed in Section 5.3, Surface Water Supply and 5.4, Groundwater Resources. Other cumulative projects generally could have effects on surface water and groundwater resources, but Alternative 1 is not expected to contribute substantially to those cumulative effects.
44	43	All the signatories [AquaAlliance, California Sportfishing Protection Alliance, California Water Impact Network] request notification of any future meetings, documents, notices, or any other communication regarding the Project. Thank you for the opportunity to comment.	The signatories identified in the comment are on the project mailing list and will be notified of project updates and milestones.

Ltr#	Cmt#	Comment	Response
44	44	[ATT1: 1: Spring 2008-2019 Groundwater Elevations – CASGEM]	The commenter provided this attachment in support of their comments. Those comments are addressed in these responses to comments. No further response is required.
44	45	[ATT2: Statewide Map of SGMA 2019 Basin Prioritization Results]	The commenter provided this attachment in support of their comments. Those comments are addressed in these responses to comments. No further response is required.
44	46	[ATT3: A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California. Submitted to the California Bay Delta Authority Science Program, Association of Bay Governments, Oakland, California by A. Close, W.M. Haneman, J.W. Labadie, D.P. Loucks (Chair), J.R. Lund, D.C. McKinney, and J.R. Stedinger. December 4, 2003]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
44	47	[ATT4: Letter from CDFW to San Luis and Delta-Mendota Water Authority, March 20, 2019 Re: Long-Term Water Transfers (Project) Draft Joint Environmental Impact Report/Environmental Impact Statement (RDEIR/RDEIS) SCH# 2011011010]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
44	48	[ATT5: Letter from Billiou Farming Company to BOR, March 16, 2019, Re: Revised EIR and Supplemental EIS for Water Transfers]	The commenter provided this attachment in support of their comments. Those comments are addressed in these responses to comments. No further response is required.
44	49	[ATT6: Letter from Professional Geologist Kit H. Custiss, dated March 16, 2019, Re: Comments on the U.S. Bureau of Reclamation and San Luis & Delta-Mendota Water Authority Revised Draft Environmental Impact Report and Supplemental Draft Environmental Impact Statement for Long-Term Water Transfers, December 2018]	The commenter provided this attachment in support of their comments. Those comments are responded to in these responses to comments. No further response is required.

Ltr#	Cmt#	Comment	Response
45	1	The DEIS purports to evaluate the potential environmental effects of five alternative plans to operate the Central Valley Project ("CVP") and State Water Project ("SWP") "to maximize water supply deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species." DEIS at 1-1. Unfortunately, as explained on the pages that follow, the DEIS is fundamentally flawed, and the Bureau of Reclamation must revise and recirculate a lawful DEIS in order to comply with NEPA.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, General Comments, for a discussion regarding the requirements for a supplemental EIS.

Ltr#	Cmt#	Comment	Response
45	2	First, the purpose and need set forth in the DEIS is unlawfully narrow and violates NEPA. The purpose and need unlawfully elevates certain purposes of the CVP above other Congressionally mandated co-equal project purposes, inconsistent with the statutory purposes of the CVP, and the purpose and need fails to adequately account for Reclamation's other legal obligations under state and federal law.	In fact, as stated in Chapter 2 of the EIS, the purpose and need includes language stating: "consistent with applicable laws, contractual obligations, and agreements". Please see Master Response 1, Responses to General Comments for additional discussion regarding the purpose and need.
45	3	The DEIS fails to evaluate a reasonable range of alternatives as required by NEPA. None of the alternatives presented will achieve the CVP's legal obligations regarding fish and wildlife protection, restoration and mitigation, compliance with state water quality standards, and complying with the Endangered Species Act. This is especially problematic in light of the fact that coordinated operations of the CVP and SWP had exceeded incidental take limits under the existing biological opinions, that federal agencies had found that reinitiating consultation was required, and that operations of the CVP and SWP were failing to prevent continued declines of listed species and causing additional harms not considered in the existing biological opinions.	As described in Chapter 3 and Appendix F, all alternatives include compliance with D-1641, the state water quality standard in the Delta. All alternatives include some actions for fish and wildlife protection, restoration, and mitigation. Alternative 2 includes water for fish and wildlife purposes as defined in D-1641, in addition to water supply for irrigation and domestic uses, flood control, river regulation and navigation, and power generation. Alternative 3 includes habitat restoration and infrastructure improvement actions in addition to the flows of Alternative 2. Alternative 4 includes substantial flows for fish and wildlife above those required in D-1641, and focuses on cold water pool management for the authorized fish and wildlife purposes of the CVP. Please see also Master Response 1, Responses to General Comments for a discussion regarding CVPIA. Please see Master Response 2, Related Regulatory Processes, regarding compliance with ESA.
45	4	The DEIS fails to provide an accurate and complete description of the preferred alternative as required by NEPA. For instance, the preferred alternative in the DEIS is described as the Proposed Action in the Bureau of Reclamation's January 2019 Biological Assessment. However, the Department of the Interior has admitted that this Proposed Action has substantially changed since January 2019, and the DEIS no longer analyzes the same project being considered in the section 7 consultation.	Alternative 1 has been refined since January 2019 and the range of effects are within those previously analyzed in the Draft EIS. Please see Master Response 4, Alternatives Formulation, regarding the refinements made to Alternative 1 since the Draft EIS. Please also see Appendix F, Modeling, Attachment 1 for additional sensitivity analysis modeling.
45	5	The DEIS fails to disclose and analyze whether or not the construction and operation of an enlarged Shasta Dam is a component of the proposed alternatives in the EIS, even though it is included in the Proposed Action in the Bureau of Reclamation's January 2019 Biological Assessment.	Please see Master Response 4, Alternatives Formulation, regarding the level of detail provided in the descriptions of each alternative. The Shasta Dam raise project is not in any of the alternatives in this EIS. It is included in Appendix Y, Cumulative Methodology, as a reasonably foreseeable future action and therefore is considered in the cumulative condition. It has its own EIS for construction and operation but a record of decision has not yet been signed. The potential future operation of the Shasta Dam raise was discussed in the proposed action in Reclamation's Biological Assessment. As stated in the Biological Assessment, Reclamation would not change operations described in the PA until the Shasta Dam Raise ROD and separate ESA

Ltr#	Cmt#	Comment	Response
			consultations are completed. Therefore, the operation of the CVP under Alternative 1 would be the same as the operation of the CVP with Shasta Dam raise, unless additional environmental compliance is done to modify operations. Appendix D1 has been modified to remove the operation of a Shasta Dam raise from the list of alternative components. Enlargement of Shasta Dam would not change seasonal operations or temperature management components under the alternatives considered in the EIS.
45	6	As the August 21, 2019 comments of the California Department of Fish and Wildlife explain, the DEIS fails to provide sufficient detail regarding the proposed project in order to be able to assess potential environmental impacts.	Please see Master Response 5, Adequacy of Analysis and Mitigation regarding the adequacy of the analysis contained in the EIS. Please also refer to the index of commenters to review responses to comments submitted by the California Department of Fish and Wildlife.
45	7	The DEIS fails entirely to adequately analyze and disclose the likely adverse environmental impacts of the proposed project and alternatives, including: (a) failing to disclose or adequately discuss how the proposed action in Alternative 1 will jeopardize endangered species, including winter-run Chinook salmon and Delta smelt; (b) failing to adequately model and analyze the full scope of the proposed alternatives; (c) failing to adequately model and analyze the impacts of likely operations under the proposed alternatives; and (d) failing to properly consider the effects of climate change in considering the effects of CVP and SWP operations. The California Department of Fish and Wildlife also concluded that the DEIS failed to adequately analyze and disclose likely adverse environmental impacts, including impacts to Longfin Smelt, which is listed as threatened under the California Endangered Species Act.	Jeopardy determinations are made as part of the Section 7 Endangered Species Act process by either USFWS or NMFS and are not made by a NEPA action agency. NEPA does not require discussion of jeopardy, and Reclamation does not make jeopardy determinations. Reclamation has modeled and analyzed all of the alternatives. To address some simplifications in the modeling of Alternative 1 as raised by several commenters on the Draft EIS, Reclamation has completed updated modeling of Alternative 1 in Appendix F, Attachment 1. The updated modeling includes a representation of the Delta Smelt Summer-Fall habitat action, spring pulse flows, and refined assumptions for OMR operations. See also Master Responses 5 and 6. Climate change has been included in all alternatives and the No Action Alternative, with ELT Q5 hydrology and a 2020 or 2030 level of development depending on the basin. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling. The EIS does address impacts to longfin smelt, in Section 1.4 (Areas of Controversy), as well as Section 4.8.2.8, which includes a description of their life history, in the aquatic resources impact analysis Sections 5.9.1.7.7 and 5.9.2.3.7, in the Cumulative Impacts analysis, and in Appendix O. Alternative 1 actions designed to benefit Delta smelt are anticipated to also benefit Longfin smelt. Please see Master Response 5, Adequacy of Analysis and Mitigation, regarding NEPA requirements for mitigation. A specific mitigation measure has been added to continue to monitor longfin smelt as coordinated with the Interagency Ecological Program.

Ltr#	Cmt#	Comment	Response
45	8	The Purpose and Need Statement in the DEIS Is Unlawfully Narrow The DEIS fails to comply with NEPA because it defined the project's objectives in unreasonably narrow terms. See Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt., 606 F.3d 1058, 1070 (9th Cir. 2010) ("An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality." (quotation marks and citation omitted)). The "Purpose and Need" of an EIS must fairly address all the needs for the proposed action and the purposes for which the proposed action will be undertaken. The purpose and need must be consistent with the statutory objectives and requirements for which a proposed action will be taken. The purpose and need in the DEIS fails to meet these NEPA requirements because it unlawfully prioritizes water supply and power generation above the other co-equal project purposes of the CVP, including fish and wildlife protection. The proposed purpose and need fails to properly identify and give appropriate weight to the purposes and needs for continued operation of the CVP that will meet Reclamation's statutory responsibilities beyond the water supply and power generation. The "need" for the proposed action as stated in the DEIS is "to use updated scientific information to better meet statutory responsibilities of the CVP and SWP." DEIS at 2-2. The "purpose" of the proposed action "is to continue the operation of the CVP in coordination with the SWP, for their authorized purposes, in a manner that enables Reclamation and DWR to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements, and to augment operational flexibility by addressing the status of listed species." DEIS at 2-2. The purpose and need in the DEIS does not adequately address all CVP purposes established under the 1992 Central Valley Project Improvement Act ("CVPIA"), or Reclamation's statutory responsibilities under the Endangered Species Act or state laws with which Reclamation must comply.	Please see response to comment 45-2.
45	9	In light of the statutory purposes of the Central Valley Project and the obligations of the State Water Project under State law [Footnote 2: See, e.g., Cal. Water Code §§ 85022, 85054.], it is unlawful to identify the purpose of the action to continue the coordinated operations of the CVP and SWP in order to "maximize water deliveries," to "optimize marketable power generation," and to "augment operational flexibility," and to "maximize water deliveries." See	Please see response to comment 45-8.

Ltr#	Cmt#	Comment	Response
		DEIS at 1-1 and 2-2. As Reclamation is aware, section 3406 of the CVPIA requires that it operate the CVP for equal purposes of water supply and "mitigation, protection, and restoration of fish and wildlife ...” and to meet the salmon doubling objective. The purpose and need statement in the DEIS is inconsistent with Reclamation's obligations under the CVPIA because it prioritizes water supply above other co-equal project purposes of the CVP [Footnote 3: In addition, subtitle J of the 2016 WIIN Act did not modify these statutory project purposes of the CVP and the operational provisions of that legislation sunset in 2021. Therefore, the WIIN Act does not provide a lawful basis for this project purpose, particularly given that operations under the DEIS extend beyond the year 2021.].	
45	10	The purpose and need statement is also inconsistent with Reclamation's obligations under the ESA, because it forecloses consideration of alternatives that would reduce water diversions in order to meet the requirements of the ESA. For instance, while the purpose and need in the DEIS focuses on increasing water diversions, reinitiation of consultation was required under the ESA, and has been undertaken, because existing operations of the CVP and SWP are jeopardizing the continued existence and recovery of ESA-listed species. In 2016, the U.S. Fish and Wildlife Service ("USFWS") and National Marine Fisheries Service ("NMFS") concurred that reinitiation of consultation under the ESA was required because of the impacts of CVP/SWP operations on endangered species during the drought, new scientific information on effects of operations of the CVP and SWP that were not considered in the existing biological opinions, and recent data showing extremely low abundance of ESA-listed species [Footnote 4: Letter from FWS to Reclamation dated August 3, 2016. A copy of this letter is included as an enclosure to these comments for inclusion in the record. See Exhibit A [ATT1].] [Footnote 5: Letter from NMFS to Reclamation dated August 17, 2016. A copy of this letter is included as an enclosure to these comments for inclusion in the record. See Exhibit B [ATT2].]. NMFS also proposed an amendment to the existing Shasta RPA because they concluded that Shasta operations were failing to avoid causing jeopardy to the species and because CVP operations had exceeded the authorized incidental take under the biological opinion [Footnote 6: That amendment is available online at: https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_s_draft_proposed_2017_rpa_amendment_-_january_19__2017.pdf and is enclosed with these comments to be included in the record. See Exhibit C [ATT3].]. Given this context, the purpose and need	Please see response to comment 45-8.

Ltr#	Cmt#	Comment	Response
		cannot be so narrowly defined as to limit the proposed action and alternatives to those that would increase water deliveries from the Delta. As the Secretary of the Interior concluded in August 2016, the best available science demonstrates that greater protections for endangered species are required in this reinitiation of consultation, including actions that will likely reduce water diversions [Footnote 7: This memorandum is available online at: https://www.nrdc.org/sites/default/files/mediauploads/doi_secretary_to_potus_8-30-16_0.pdf and is enclosed with these comments to be included in the record. See Exhibit D [ATT4].]. CVP operations that reduce exports are consistent with Reclamation's legal obligations, and defining the purpose and need so narrowly as to effectively prejudice robust consideration of these reasonable alternatives is unlawful. See, e.g., Environmental Protection Information Center v. U.S. Forest Service, 234 Fed. Appx. 440 (9th Cir. 2007). Reclamation has a statutory obligation to ensure that CVP operations do not jeopardize the continued existence or recovery of listed species, or adversely affect their designated critical habitat. The purpose and need must be revised to explicitly address Reclamation's ESA-responsibilities and ensure consideration of alternatives that meet them.	
45	11	As currently drafted, the purpose and need statement is improperly narrow and fails to comply with NEPA. Reclamation must revise the purpose and need statements to set forth a sufficiently broad purpose and need that captures the statutory purposes and requirements that CVP operation must meet, and therefore does unlawfully preclude consideration of alternatives that will ensure all of Reclamation's statutory responsibilities are satisfied.	Please see response to comment 45-8.
45	12	The DEIS Fails to Consider a Reasonable Range of Alternatives Pursuant to NEPA, an environmental impact statement must consider a reasonable range of alternatives. 42 U.S.C. § 4332; 40 C.F.R. §§ 1502.14, 1508.25(b). "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 813 (9th Cir. 2005) (quotation marks and citation omitted). The DEIS clearly fails to include a reasonable range of alternatives because it fails to include alternatives that would result in reduced diversions from the Bay-Delta watershed in order to meet other legal obligations of the CVP and SWP, including ensuring compliance with the Endangered Species Act. By failing to evaluate an alternative that would result in reduced water diversions in order to achieve the CVP's project purpose to mitigate, protect,	Alternative 4 results in reduced diversions from the Bay-Delta watershed in order to increase cold water pool and instream flows for fish.

Ltr#	Cmt#	Comment	Response
		and restore fish and wildlife, and meet other legal obligations, the DEIS fails to satisfy NEPA's requirement to consider a reasonable range of alternatives.	
45	13	The need for Reclamation to consider an alternative that likely reduces water diversions in order to ensure the mitigation, protection, and restoration of fish and wildlife is clear [Footnote 8: Indeed, in 2015, Reclamation appropriately included an alternative (Alternative 5) that improved environmental flows and reduced Delta exports as part of the Environmental Impact Statement ("EIS") analyzing long term operations of the CVP and SWP. See Bureau of Reclamation, Final Environmental Impact Statement, Coordinated Long-Term Operation of the Central Valley Project and State Water Project, November 2015, available online at: https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=21883, and incorporated by reference in the record. Excerpts are enclosed to this letter for inclusion in the record. See Exhibit E [ATT5]. For instance, page 35 of the Record of Decision states that Alternative 5 would reduce long term average CVP and SWP exports by 13 percent and 27 percent, respectively.]. The best available science indicates that diversions from the Bay-Delta watershed must be reduced to sustain and restore native fish and wildlife, including species listed under the Endangered Species Act. For instance, due to the dramatic impacts of CVP and SWP operations on listed species during the 2012-2016 drought, USFWS and NMFS found that reinitiation of consultation under section 7 of the ESA was required [Footnote 9: Section 7(d) of the ESA prohibits Reclamation from making irretrievable commitments of resources during the pendency of the reinitation of consultation, requiring that the Bureau maintain the status quo during the consultation process. See, e.g., Pacific Rivers Councils v. Thomas, 936 F.Supp. 738, 745 (D. ID 1996) (citations omitted). Reservoir releases and water diversions constitute an irretrievable commitment of resources under section 7(d) of the ESA. Kandra v. U.S., 145 F.Supp.2d 1192, 1210-1211 (D. Or. 2001); see Pacific Coast Fed'n of Fishermen's Assoc. v. Bureau of Reclamation, 138 F.Supp.2d 1228, 1249 fn. 19 (N.D.Cal.2001). Failing to fully implement the biological opinion until completion of the section 7 consultation process would violate the ESA.]. As noted above, Interior Secretary Jewell informed the President that this reinitiation of consultation would result in greater protections for Delta Smelt and winter-run Chinook salmon, which would likely result in reduced water supply from the CVP and SWP south of the Delta. In addition, NMFS provided Reclamation with a revised Shasta Reasonable and Prudent Alternatives ("RPA") amendment in January 2017, in order to prevent Shasta Reservoir operations	Reclamation found that reinitiation of Section 7 of the ESA was required in August 2016 due to low populations of listed species, new information as a result of the drought, and new information available or likely to become available as a result of collaborative science processes. In the August 2016 memo, Secretary Jewell and Michael Connor state that, "The reinitiation process will likely lead to new or amended biological opinions that will increase protections for these species." They also state later in that paragraph on page 2 that, "The timeframe being contemplated should allow the new Administration time to establish itself before new biological opinions are issued that could lead to further reductions in water availability south of the Delta." Note the use of "could lead to further reductions in water availability" in the actual memorandum, rather than the "likely result in reduced water supply" stated in this comment. Please see also the previous responses above and Master Response 1, Responses to General Comments.

Ltr#	Cmt#	Comment	Response
		from jeopardizing the continued existence and recovery of winter-run Chinook salmon and in light of NMFS' determination that the incidental take limit in the 2009 biological opinion had been exceeded. Operations of the CVP and SWP over the past several years, including the failure to fully implement the requirements of the 2008 and 2009 biological opinions during the drought, are jeopardizing Delta smelt, winter-run Chinook salmon, spring-run Chinook salmon, longfin smelt, and other native species. Adjusting long-term operations of the CVP and SWP to mitigate, protect, and restore these endangered fish is required by law, and the DEIS must consider an alternative that will achieve this purpose.	
45	14	The DEIS also fails to consider any alternatives that are consistent with the State Water Resources Control Board's Bay-Delta Water Quality Control Plan as amended in December 2018. The State Water Board adopted the Bay-Delta Plan in December 2018, before Reclamation's first version of the Proposed Action in the BA, and over six months in advance of issuance of the DEIS. Both the CVPIA and the Reclamation Act of 1902 require operation of the CVP in compliance with State law, and yet the DEIS fails to include any alternative that analyzes or explains how the proposed operations will ensure compliance with the new instream flow standards for the Stanislaus River. Instead, in the DEIS Reclamation proposes to reduce instream flows in the Stanislaus River, despite these water quality standards requiring existing or higher instream flows in the Stanislaus River.	Please see Master Response 1, Responses to General Comments, regarding the SWRCB's update to the Bay-Delta Water Quality Control Plan as well as a discussion regarding CVPIA obligations.
45	15	The DEIS also fails to consider any alternatives that are consistent with the State Water Resources Control Board's ("SWRCB") final scientific basis report for the Phase II update of the Bay-Delta Water Quality Control Plan [Footnote 10: The SWRCB's Final Report is available online at: https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf and is enclosed with these comments to be included in the record. See Exhibit F [ATT6].] and Board's July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan [Footnote 11: This document is available online at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf and is enclosed with these comments to be included in the record. See Exhibit G [ATT8].]. The Scientific Basis report explicitly concludes that, "[t]he best available science, however, indicates that these requirements [D1641 and the 2008 and 2009 biological opinions] are insufficient to protect fish and wildlife." SWRCB 2017 at page 1-5. The Report concludes that the best available science supports the adoption of	While Reclamation has not included any alternatives that specifically operate in accordance with the SWRCB's final scientific basis report, as no plans or decisions for Phase II or plans for implementation of either of the Phase I or Phase II updates to the Bay-Delta Water Quality Control Plan have been reached, Alternative 4 in the Draft EIS does include significant instream flows beyond those in both D-1641 and the 2008 and 2009 BOs, as well as prioritizing storage for cold water pool management. As stated in the EIS, "Alternative 4 would manage reservoir storage for the primary objective of preserving the coldwater pool. In addition to managing water temperatures, Alternative 4 would release additional instream flows in the Sacramento River and its tributaries to benefit fish but would balance this operation with the need to preserve the coldwater pool." This highlights the most important difference between Alternative 4 and the SWRCB's proposed unimpaired flow criteria. When increasing requirements for in-river flows are added, this has the effect of de-emphasizing storage, reducing abilities to store water in surface water reservoirs for dry seasons and reducing cold water pool for spawning

Ltr#	Cmt#	Comment	Response
		significant new protections that would increase instream flow, increase Delta outflow, improve cold water pool management at upstream reservoirs, and limit the ecological impacts of CVP/SWP operations in the Delta. However, the DEIS wholly fails to consider any alternatives that are consistent with the flow and operational limitations identified in the State Water Resources Control Board's 2017 Final Scientific Basis Report and July 2018 Framework.	salmonids. Therefore, Reclamation, attempting to include Alternative 4 as a bookend with improved conditions for fish, added mechanisms into the modeling to ensure higher storage levels (and therefore improved cold water pool) then what would occur under an unimpaired inflow only alternative.
45	16	While the DEIS considers alternatives that include habitat restoration, such measures do not substitute for consideration of alternatives that reduce diversions in order to increase flows. The best available science demonstrates that while non-flow measures, such as habitat restoration, can complement flow measures, they are not a substitute for flow and export restrictions. For instance, in 2015 Reclamation's final EIS ("FEIS") on long-term SWP and CVP operations analyzed the effects of several alternatives that did not fully implement the biological opinions and substituted non-flow measures like habitat restoration or predator control [Footnote 13: The 2015 Final EIS on the Long-Term Operations of the CVP and SWP is available at https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=21883]. Scientific information submitted by state and federal agencies concluded these measures did not adequately protect fish and wildlife. In the final EIS and Record of Decision ("ROD") Reclamation rejected implementation of the alternatives, concluding that they resulted in adverse impacts to aquatic resources, as compared to the No Action Alternative. Similarly, as part of the Bay Delta Conservation Plan/ California WaterFix process, Reclamation and other federal and state agencies determined that there was not adequate scientific information to conclude that habitat restoration could substitute for flow measures, including restrictions on exports and water diversions. Given the dire status of the species and the available scientific information, there is no legal basis to conclude that non-flow measures would adequately substitute for the existing RPA actions in the 2008 and 2009 biological opinions (which themselves are insufficient to mitigate, restore, and protect fish and wildlife).	Alternative 3 includes flows in accordance with D-1641, in addition to habitat restoration actions. However, Alternative 1 includes both additional flow measures above D-1641 for the benefit of fish and wildlife as well as habitat restoration, facility improvements to increase flexibility, and intervention measures to address critical flow and habitat limits in times of drought. Alternative 4 includes flow actions for fish and wildlife as well as water use efficiency, without habitat restoration. Please see also Master Response 1, Responses to General Comments.
45	17	Significant increases to Delta outflow will be required in the future to protect longfin smelt. The California Department of Fish and Wildlife's DEIS comments indicate that the proposed project fails to adequately assess impacts to longfin smelt, that the reduction in outflow is likely to adversely impact Longfin Smelt, and that mitigation measures in the form of increased Delta outflow from January to June is necessary to mitigate these adverse impacts. The SWP's existing permit for the incidental take of longfin smelt under the California Endangered Species Act ("CESA") expires in December 2018, and it	Please see response to comment 45-7. The State Water Project will separately comply with the requirements of CESA and Reclamation will continue to operate as a partner agency consistent with applicable federal laws.

Ltr#	Cmt#	Comment	Response
		is anticipated that the new permit will require significant increases in Delta outflow during the winter and spring months. While the existing CESA incidental take permit currently only applies to the SWP, both the CVPIA and Reclamation Act of 1902 require the CVP to be operated in compliance with state law and Reclamation has previously stated that it would assist the SWP in meeting obligations under CESA. See letter from John F. Davis, Deputy Director, U.S. Bureau of Reclamation to John McCammon, California Department of Fish and Wildlife, dated February 13, 2008 (enclosed as Exhibit H [ATT7]). There is no reason to believe that the requirements of CESA with respect to longfin smelt are preempted by federal law. In addition, USFWS has concluded that listing of longfin smelt under the ESA is warranted, and that existing regulatory requirements fail to adequately protect this species. 77 Fed. Reg. 19756 (April 2, 2012). Despite all this, the DEIS fails to analyze any alternative that would effectively achieve the requirement of mitigating, protecting, and restoring fish and wildlife.	
45	18	Overall, the DEIS is inadequate because it does not include a reasonable range of alternatives that include and analyze measures and operations that would ensure Reclamation meets its co-equal obligations and requirements when operating the CVP. Reclamation must revise and recirculate a DEIS that includes a reasonable range of alternatives.	Please see response to comment 45-16 and Master Response 4, Alternatives Formulation, regarding the adequacy of the range of alternatives evaluated.
45	19	The DEIS Fails to Adequately Describe the Proposed Project and Alternatives The DEIS is fundamentally flawed because it fails to adequately and accurately describe the proposed project. First, the proposed project in the DEIS has changed significantly since the DEIS was released and it continues to change and has not been finalized. As a result, the analyses presented and the comparison of the impacts of alternatives in the DEIS do not provide the public or decisionmakers with an assessment of the environmental consequences of the project as it is likely to be adopted and its alternatives as required. Since its release in January 2019, the Proposed Action in the Biological Assessment has undergone substantial changes that could result in substantial changes to the analyzed impacts of the operational and non-operational elements of Alternative 1 – the preferred alternative in the DEIS [Footnote 14: A copy of the April 2019 “Proposed Action” chapter of the Biological Assessment identifying changes to the January 2019 “Proposed Action” chapter of the Biological Assessment is enclosed with these comments to be included in the record. See Exhibit I [ATT9].]. When it released a revised Biological	Please see response to comment 45-4 and 45-7.

Ltr#	Cmt#	Comment	Response
		Assessment in July 30, 2019, Reclamation identified changes to 27 elements of the Proposed Action between the January 2019 and July 2019 Biological Assessment [Footnote 15: A table identifying the changes is enclosed with these comments to be included in the record. See Exhibit J [ATT10].]. Several of these changes will impact the modeling and analyses that supports the conclusions in the DEIS regarding impacts of the alternatives, and yet modeling of the Proposed Action's impacts has not been updated. For instance, NMFS and other agencies have noted that the revisions to the summer/fall outflow action for Delta Smelt are not included in the modeling and would likely affect the modeling results and environmental impacts. The DEIS must be revised, as necessary, and recirculated for public comment once the Proposed Action in the BA is finalized and the modeling in the BA (and relied on this DEIS) is updated to reflect the operations of the final Proposed Action. Until this occurs, Reclamation's reliance on the modeling and analysis presented in the BA will not result in disclosure of the environmental consequences of the alternatives in the DEIS as required by NEPA.	
45	20	The DEIS fails to adequately explain whether construction and operation of an enlarged Shasta Dam is part of the proposed project and/or other alternatives. In the main text of the DEIS, Reclamation fails to include operation of an enlarged Shasta Dam in its description of the proposed action in any of the proposed alternatives. Further, in the cumulative impacts analysis in Chapter 5 of the DEIS, Reclamation refers to the enlargement of Shasta Dam briefly in the cumulative effects analysis when describing and discussing reasonably foreseeable future projects and their impacts. In addition, Table 3.1.1. in Appendix D, which provides the results of the component screening process in alternative development, indicates that Shasta Dam reservoir expansion is not within the scope of the proposed action, and therefore is not included in the proposed action alternatives in the DEIS. From these portions of the DEIS, it would appear that the enlargement and operation of an enlarged Shasta Dam is not part of the proposed action or alternatives discussed or analyzed in the DEIS. However, in Appendix D1, which describes the components of the, Reclamation identifies "Operation of a Shasta Dam Raise" as among the Water Operations that are included in the proposed action. Moreover the Proposed Action in the Biological Assessment, upon which the preferred alternative in the DEIS is based, includes the "Shasta Dam Raise" as section 4.9.1.4.1. and	Please see response to comment 45-5.

Ltr#	Cmt#	Comment	Response
		explains that operation of an enlarged Shasta Dam is part of the plan for the long-term operation of the CVP. Reclamation's failure to maintain a consistent position on whether operation of an enlarged Shasta Dam is or is not within the scope of the proposed alternatives completely subverts NEPA's twin goals of (1) ensuring the agency has available and carefully considers detailed information concerning significant environmental impacts and (2) promoting informed public participation by requiring full disclosure of governmental decisions affecting environmental quality. Reclamation's failure in this regard is itself a failure to comply with NEPA's requirement to guarantee relevant information is presented to the public during the NEPA process. See N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1072 (9th Cir. 2011).	
45	21	The DEIS Fails to Adequately Assess the Impacts of Proposed Alternatives on the Environment Reclamation is required by NEPA to take a hard look at the environmental consequences of its proposed action and alternatives. To do so, Reclamation must rely on "high quality information" and ensure scientific integrity of the discussions and analyses in its EIS. See 40 C.F.R. §§ 1500.1(b), 1502.24. These requirements must be met in order to allow for "[a]ccurate scientific analysis, expert agency comments, and public scrutiny." Id. One of NEPA's fundamental purposes is "to guarantee relevant information is available to the public." N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1072 (9th Cir. 2011). A DEIS is deficient if it fails to provide the public with adequate, accurate information that it can use to make an informed comparison of the alternatives evaluated in the EIS. See Natural Res. Def. Council v. U.S. Forest Service, 421 F.3d 797, 811 (9th Cir. 2005) ("Where the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS may be necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA." (quotation marks and citation omitted)). The DEIS does not meet these requirements, and therefore does not provide the requisite hard look at the environmental consequences of the alternatives presented.	Reclamation believes the EIS does provide a science-based and through evaluation of the environmental effects on implementing each alternative. The EIS includes appendices which contain much of the information used to reach the environmental impact conclusions contained in the body of the document. In addition, the EIS includes overviews of impact assessment methods which provides readers information regarding how the assessments were conducted and the application of models, data, and other scientific information. Each chapter of the EIS and EIS appendix also include bibliographies which disclose the sources of information used in the environmental analyses for each resource topic addressed.
45	22	The DEIS Fails to Adequately Disclose, Analyze, and Address How Implementation of the Action Alternatives Will Negatively Impact and Likely	Jeopardy determinations are made as part of the Section 7 Endangered Species Act process by either USFWS or NMFS, and are not made by a NEPA action agency. NEPA does not require discussion of jeopardy, and Reclamation does

Ltr#	Cmt#	Comment	Response
		Jeopardize the Continued Existence of Endangered Species, including Winter-run Chinook Salmon and Delta Smelt Chapter 5 of the DEIS and the associated appendices for each of the 18 resource categories describe the environmental consequences of the No Action Alternative and the action alternatives. Nowhere in Chapter 5 or these appendices does Reclamation disclose, analyze, or address the fact that NMFS has previously found, based on publicly available documents, that the proposed action is likely to jeopardize the continued existence of listed species and adversely modify their designated critical habitat [Footnote 16: On July 1, 2019, after consultation on the Proposed Action in Reclamation's Biological Assessment, the NMFS concluded that the Proposed Action, which is the preferred alternative in the DEIS, is likely to cause jeopardy to winter-run Chinook salmon, spring-run Chinook, Central Valley steelhead, and Southern Resident killer whale. A copy of this July 2019 Jeopardy Biological Opinion can be downloaded at https://www.documentcloud.org/documents/6311822-NMFS-Jeopardy-Biop-2019-OCR.html and is enclosed with this letter to be included in the record. See Exhibit K [ATT11].]. Instead, the DEIS presents an analysis based on faulty modeling (described in detail below), provides incomplete information, and assumes implementation of measures that are not reasonably certain to occur, in order to conclude that the implementation of the preferred alternative will be protective of endangered species. However, thorough analysis indicates that the operations proposed in the alternatives in the DEIS are likely to adversely affect salmon and other species, including jeopardizing their continued existence and recovery. The failure to adequately disclose, analyze, and address how implementation of the preferred alternatives will jeopardize endangered species and adversely affect their critical habitat, prevents the DEIS from providing accurate scientific analysis and facilitating expert agency comments and public scrutiny. As a result, the DEIS fails to provide the required hard look at the impacts of the proposed action, and thus fails to satisfy NEPA.	not make jeopardy determinations. Please refer to Master Response 2, Related Regulatory Processes, for description of the relationship between the Section 7 process and NEPA. Furthermore, the unsigned draft July 1, 2019 Biological Opinion referenced in this letter was not transmitted to Reclamation. NMFS' final BO, which included additional revisions to the proposed action (Alternative 1) included a no jeopardy determination.
45	23	The DEIS Fails to Consider Prior Findings by the Department of Interior and NMFS that Greater Protections for Endangered Species Are Necessary to Comply with the ESA Reclamation's failure to thoroughly and objectively discuss and analyze the impacts of proposed alternatives on endangered species is particularly problematic considering that the entire purpose of reinitiating consultation and revising the operations of the CVP was to develop and implement operational	Reclamation's request for reinitation letter on August 2, 2016 to NMFS stated that: "This request is based on new information related to multiple years of drought, recent data demonstrating extremely low listed-salmonid population levels for the endangered winter-run Chinook salmon, and new information available and expected to become available as a result of ongoing work through collaborative science processes." The reinitation letter was not a decision document and did not make any "findings." Further, the letter stated that Reclamation's expectation was that the consultation would update system-wide

Ltr#	Cmt#	Comment	Response
		criteria for the CVP that would strengthen protections for listed species, in order to prevent extinction of Delta Smelt, endangered salmonids, and Southern Resident Killer Whales. In August 2016, both the Service and NMFS concluded that reinitiation of consultation was required under the ESA and the 2008 and 2009 Biological Opinions. As the Service explained Due to multiple dry years and new information. We recognize that this new information is demonstrating the increasingly imperiled state of the Delta Smelt and its designated critical habitat, and that emerging science shows the importance of outflows to all life stages of Delta Smelt and to maintaining the primary constituent elements of designated critical habitat. Similarly, on August 30, 2016 the Secretary of the Interior concluded that Delta Smelt may be headed towards extinction under baseline conditions, and that "[t]he reinitiation process will likely lead to new or amended biological opinions that will increase protections for the species." An analysis included with the draft effects analysis (DSM TN 40 by Leo Polansky) further demonstrates that the species is likely to go extinct under current baseline conditions. Likewise, on August 17, 2016, NMFS concluded that reinitiation of consultation was required under the ESA regulations and the 2009 biological opinion, due to "new information related to the effects of multiple years of drought, recent data demonstrating extremely low abundance levels for Sacramento River endangered winter-run Chinook salmon and threatened spring-run Chinook salmon, and new information." NMFS further concluded that modifications to the Shasta RPA in the 2009 biological opinion were warranted using the adaptive management provisions of that biological opinion, because "Various RPA actions within Action Suite I.2 are not performing as designed to achieve their objective to avoid jeopardy of winter-run Chinook salmon during extended drought conditions." NMFS also admitted in late 2016 that the performance standards of RPA Action I.2.1 have not been met and that "the level of incidental take in 2014 and 2015 was greater than analyzed or authorized in 2009 when the RPA was developed." In the August 30, 2016 memorandum, the Secretary of Interior noted that protections in the new biological opinions would likely reduce water supply for CVP and SWP contractors South of the Delta. However, rather than increasing protections for Delta Smelt and endangered salmonids as proposed by the Secretary of the Interior and by NMFS in 2016, the proposed action would significantly weaken existing protections for these species, and does not	operating criteria and evaluate the efficacy of the RPAs (whether they produce the intended result) in terms of meeting ESA requirements. Reclamation found that various aspects of RPA Action Suite I.2 did not perform as designed during extended drought conditions. Alternative 1 includes a revised cold water pool management approach for Shasta to address this concern and focus cold water pool resources on the most critical time periods for the fish. The Draft EIS includes 4 alternatives, including Alternative 1, which is the preferred alternative, as well as Alternative 4, which provides increased instream flows for fish at the expense of water supply. Alternative 1 provides additional habitat restoration measures and facility improvements to improve operations for fish, including studies of TCD operation, predation hot spot removal, Battle Creek, Deer Creek, and KLOG restoration and fish passage projects, as well as continued implementation of many of the ongoing habitat restoration projects started after the 2008 and 2009 Biological Opinions, such as tidal habitat restoration in the Delta, and Yolo Bypass. Alternative 1 also includes performance measures and independent review panels to allow for updates to approaches over time as new science and implementation performance is available. The alternatives include a range in exports, from decreased exports under Alternative 4 to the highest increase in exports under Alternative 2 and 3. The DEIS discusses the controversy around the effects of exports in Section 1.4.2.1. The DEIS evaluates the impacts of increased pumping on salmon and steelhead in Sections 5.9.1.7.1 for Winter-run, 5.9.1.7.2 for Spring-run, 5.9.1.7.3 for Fall-run, 5.9.1.7.4 for Steelhead, and 5.9.1.7.5 for Green Sturgeon. Regarding storm events, Reclamation's revised modeling of Alternative 1 (Appendix F, Attachment 1) includes assumptions that storm flexibilities would occur in Wet, Above Normal, and Below Normal water years if neither the turbidity bridge or first flush event is in effect, at an OMR of -6000 cfs for 7 days each in January and February. In Dry years, Reclamation assumes a storm event flexibility of -6000 cfs OMR for 7 days in January or February, but not both. These assumptions differ from the original Alternative 1 modeling by adding in Wet year storm event flexibilities. Originally Reclamation did not include storm event flexibilities in wet years because often in Wet years South of Delta reservoirs are full and Reclamation is unable to take additional water due to lack of space. However, for purposes of the EIS and ensuring sufficient analysis of possible impacts, Reclamation has modified the modeling to add additional storm OMR flex events in Wet years. The San Joaquin Inflow to Export Ratio required in 2009 Biological Opinion RPA Action IV.2.1. is

Ltr#	Cmt#	Comment	Response
		provide additional conservation measures. As explained below, the proposed action is likely to increase entrainment mortality, particularly entrainment of larvae and juvenile Delta Smelt, by weakening Old and Middle River flow requirements, and it is likely to reduce survival and abundance, and adversely modify designated critical habitat, by reducing Delta outflow. Moreover, operation of the preferred alternative in the DEIS would eliminate RPA action IV.2.1 in the 2009 biological opinion, would provide virtually unlimited exceptions from RPA Action IV.2.3 in the 2009 biological opinion, and would result in levels of temperature-dependent mortality of winter-run Chinook salmon that greatly exceed the maximum thresholds identified by NMFS as necessary to avoid jeopardizing winter-run and spring-run Chinook salmon. The DEIS fails to address the facts and information that demonstrate the harmful and significant negative impacts that the proposed action will have on endangered Delta smelt and salmonids. Likewise, it fails to provide sufficient information or analysis to demonstrate that the proposed action will provide the additional protections for endangered species that the Service and NMFS indicated in 2016 would be necessary to prevent extinction of these species. As a result, the DEIS fails to satisfy NEPA’s hard look requirement. The DEIS should be revised and recirculated to address these concerns.	replaced in Alternative 1 with OMR restrictions based on fish presence and cumulative and single-year loss thresholds, and effects of exports are analyzed in Section 5.9.1.7 of the Draft EIS. See also Section 1.4.2.1 of the Draft EIS.

45	24	The DEIS Fails to Adequately Analyze the Adverse Effects of Reduced Delta Outflows on Delta Smelt Consistent with the Service's August 3, 2016 memorandum regarding the reinitiation of consultation, the best available science demonstrates that reducing Delta outflow will adversely affect all stages of Delta Smelt, reduce the survival and abundance of Delta Smelt and adversely modify designated critical habitat. However, the DEIS not ensure accurate scientific analysis of this issue, and instead ignores information discussed below when discussing potential impacts of reduced Delta outflows on Delta smelt. For instance, the 2015 MAST report found statistically significant effects of Delta outflow on subsequent abundance of Delta Smelt in both the spring and fall time periods [Footnote 17: The MAST report is available online at: https://www.fws.gov/sfbaydelta/documents/Delta_Smelt_MAST_Synthesis_Report_January_2015.pdf and is enclosed with these comments to be included in the record. See Exhibit L. [ATT12]]. The Service likewise concluded in the 2017 biological opinion for the California WaterFix project that reducing Delta outflow in the summer months would have adverse population-level effects. See, e.g., FWS Biological Opinion for California WaterFix at 273 (where proposed project results in eastward movement of X2, "we would expect to see population-level effects more adverse than in the baseline conditions from effects of reduced habitat availability (i.e., habitat contraction)."); id. at 295 (small changes in X2 during the juvenile rearing season would result in loss of juvenile and adult Delta Smelt from poor habitat conditions, which "would affect abundance and recruitment contributing to the next generation of delta smelt.") [Footnote 18: The FWS Biological Opinion for WaterFix is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/usfws_bo.pdf and enclosed with these comments for inclusion in the record. See Exhibit M [ATT13].]. Service staff have produced multiple papers, analyses, and public presentations finding population-level effects between Delta outflow at various times of year and the survival and abundance of Delta Smelt. More recently, the life cycle modeling work performed by the Service (Leo Polansky) continues to find that delta outflow / X2 has statistically significant, population level effects on Delta Smelt abundance at different life stages [Footnote 19: Portions of Leo Polansky modeling work are enclosed with this letter for incorporation in the record. See Exhibit N [ATT14].]. Consistent with that scientific understanding, the Department of the Interior previously committed to augmenting Delta outflow above current State Water	There is a discussion of the importance of outflow to Delta Smelt in Section 1.4 of the EIS, which states, in part: "Detailed investigations have provided some evidence for the importance of fall X2 from specific wet years (Brown et al. 2014), but work is ongoing to conduct further studies to reduce the uncertainty (Hobbs et al. 2019; Schultz et al. 2019). Spring outflow has also emerged as an area of renewed interest; previous studies did not suggest a link to Delta Smelt population dynamics (e.g., Kimmerer et al. 2009), whereas more recent preliminary analyses have provided some support for a potential positive effect of outflow (IEP MAST 2015). In addition, there is also interest in the potential effects of summer Delta outflow for Delta Smelt (Schultz et al. 2019)." This potential impact is also addressed in Section 5.9.1.7.6, where the EIS states, "Reductions in Delta outflow during spring, summer, and fall could negatively affect Delta Smelt food availability in the Suisun Bay and Marsh region although there is some uncertainty in the extent to which outflow changes of the magnitude predicted under Alternatives 1, 2, and 3, relative to the No Action Alternative would change food availability relative to outflow changes attributable to hydrological conditions (i.e., wetter vs. drier years). Reductions in Delta outflow during spring, summer and fall could also reduce the surface area of low salinity zone water (i.e., salinities between 1 and 6) under Alternatives 1, 2, and 3, relative to the No Action Alternative." Furthermore, this is also included in analysis in Appendix O. With respect to outflow augmentation, the document cited by the commenter refers to the Delta Smelt Resiliency Strategy (http://resources.ca.gov/docs/Delta-Smelt-Resiliency-Strategy-FINAL070816.pdf), which proposed outflow augmentation in 2017 and 2018 (not per year as the commenter suggests). As noted in the update to the Delta Smelt Resilience Strategy (http://resources.ca.gov/docs/Delta-Smelt-Resiliency-Strategy-Update.pdf), additional outflows were not necessary in water year 2016-2017, one of the wettest on record. The document cited by the commenter notes that outflow augmentation proposed under the Delta Smelt Resiliency Strategy was aimed at informing possible actions under the new Delta Smelt BO (i.e., the 2019 ROC LTO BO), and was not not an ongoing commitment to a specific action. Work to understand the effects of outflow is ongoing (as noted in the update to the Delta Smelt Resilience Strategy cite above) and the summer-fall habitat action included in preferred alternative includes biological and environmental objectives for June-October, subject to structured decision making and actions such as reoperation of the Suisun Marsh Salinity Control Gates, with a collaborative planning process and peer review included to guide the action.

Ltr#	Cmt#	Comment	Response
		Resources Control Board requirements in order to better protect Delta Smelt and prevent extinction. See Department of the Interior Secretarial Order 3343 at 5 (Committing Reclamation and DWR to providing up to an additional 250,000 acre feet per year of outflow above SWRCB requirements) [Footnote 20: A copy of Department of the Interior Secretarial Order 3343 can be found here https://www.doi.gov/sites/doi.gov/files/uploads/sec_order_no._3343_cal_water_0.pdf and is enclosed with these comments to be included in the record. See Exhibit O [ATT15].]. Similarly, in their letter requesting reinitiation of consultation, Reclamation and DWR agreed to implement the Delta Smelt Resiliency Strategy, which included the supplementation of summer outflow, until new biological opinions were completed. Unfortunately, as you are aware, Reclamation and DWR have failed to implement this element of the Delta Smelt Resiliency Strategy. The proposed action in the DEIS does not propose to implement it either, and the DEIS fails to explain or otherwise analyze why not.	Please refer to Master Response 7, Aquatic Analysis, regarding Delta outflow and summer and fall habitat operations to benefit Delta smelt. See Master Response 1, Response to General Comments, regarding the relationship of the EIS to water rights and other ongoing plans, programs or policies, including Delta Conveyance (formerly California WaterFix). Refer to Master Response 2, Related Regulatory Processes, regarding the relationship between the EIS and the ESA Section 7 process and previous Biological Opinions. See Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science.
45	25	The Service has previously concluded that Delta outflows affect “all life stages” of Delta Smelt and its critical habitat and that reducing Delta outflow in the summer would have adverse population level effects on Delta Smelt. However, the DEIS analysis fails to evaluate the effect of changes in outflow on Delta Smelt throughout its life cycle. The proposed action effectively proposes to reduce Delta outflow during the winter, spring, summer and fall months. Importantly, Reclamation’s modeling of current operations [Footnote 21: The DEIS analysis appears to ignore the without project baseline in the Bureau’s final biological assessment. We note that the without project baseline appears to provide far better conditions for nearly all species analyzed in the biological assessment, including Delta Smelt.] in the DEIS includes significant reductions in Delta outflow during the summer months of drier years (see highlighted cells in the table below [Exhibit 1]), which are inconsistent with current baseline conditions and which would result in similar adverse effects to those identified by the Service in the WaterFix biological opinion. Overall, the DEIS appears to ignore the body of scientific information demonstrating adverse population level effects of reduced Delta outflow, “to all life stages of Delta Smelt and to maintaining the primary constituent elements of designated critical habitat,” as the Service concluded in 2016. The DEIS also ignores conclusions from independent peer reviews of the draft Biological Opinions prepared by the Service that analyze the Proposed Action presented in	Please see response 45-24.

Ltr#	Cmt#	Comment	Response
		Reclamation’s Biological Assessment. These peer reviews, which are not addressed in the DEIS, support our [Natural Resources Defense Council] concerns regarding the impacts of the preferred alternative on Delta Smelt. See Merz Review at 3 (“In short, the BiOP demonstrates that the PA generally will reduce delta outflow with relatively little evidence from Reclamation that this will not negatively alter delta smelt from its present trajectory.”); id. at 6-8, 15; Kneib Review at 2, 11-12 [Footnote 22: Peer Reviews of the draft Biological Opinions by Merz and Kneib are enclosed with this letter for inclusion in the record as Exhibits P [ATT16] and Q [ATT17], respectively.]. The DEIS must use high quality information, including the best available science regarding the effects of changes in Delta outflow on Delta Smelt, and it must ensure scientific integrity when evaluating whether that proposed operations will jeopardize the species or adversely modify its critical habitat. The failure to do so, which results in the failure to take a hard look at the impacts of reduced Delta outflows on Delta Smelt, renders the DEIS insufficient.	
45	26	[Exhibit 1: Tables showing August & September Delta Outflows for ROC and WaterFix]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	27	The DEIS, and Associated Biological Assessment, Fail to Accurately Assess the Impacts of Increased Entrainment Under the Proposed action As explained in the DEIS, the proposed action would significantly increase South of Delta exports and increase the magnitude, frequency, and duration of reverse flows in Old and Middle River. However, the DEIS fails to accurately assess the proposed project, and thus grossly underestimates the adverse effects of the proposed project on entrainment of Delta Smelt and other species. First, the DEIS fails to accurately model and analyze the effects of the waivers of OMR requirements during storm events as part of the proposed project.	Reclamation's revised modeling of Alternative 1 (Appendix F, Modeling, Attachment 1) includes assumptions that storm flexibilities would occur in Wet, Above Normal, and Below Normal water years if neither the turbidity bridge or first flush event is in effect, at an OMR of -6000 cfs for 7 days each in January and February. In Dry years, Reclamation assumes a storm event flexibility of -6000 cfs OMR for 7 days in January or February, but not both. These assumptions differ from the original Alternative 1 modeling by adding in Wet year storm event flexibilities. Originally Reclamation did not include storm event flexibilities in wet years because often in Wet years South of Delta reservoirs are full and Reclamation is unable to take additional water due to lack of space. However, for purposes of the EIS and ensuring sufficient analysis of possible impacts, Reclamation has modified the modeling to add additional storm OMR flex events in Wet years. Reclamation's preferred alternative includes a specific action to protect against larval and juvenile Delta Smelt entrainment. As described in Alternative 1, "On or after March 15 of each year, if Q-West is negative, and larval or juvenile delta smelt are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages, Reclamation and/or

Ltr#	Cmt#	Comment	Response
			DWR will regularly run hydrodynamic models informed by the EDSM, 20 mm, or other relevant survey data to estimate the percentage of larval and juvenile delta smelt that could be entrained. The modeled results will be used by Reclamation and/or DWR, in conjunction with other relevant information, to formulate the operation of their south Delta export facilities at OMR levels which will limit entrainment of larval and juvenile delta smelt to acceptable levels based on estimated abundance. Reclamation and DWR will seek technical assistance from FWS and DFW to determine whether or not an operational action protective of larval and juvenile delta smelt, which may include more positive OMR flows, should be taken. These operations will be determined based on real time conditions and will continue until the risk is abated."
45	28	The proposed action would significant increase OMR flows during the larval and juvenile rearing period because it proposes to eliminate Action IV.2.1 in the 2009 NMFS biological opinion (San Joaquin River inflow: export action). This element of the proposed action is likely to significantly increase entrainment of larval and juvenile Delta smelt, which the Bureau of Reclamation estimated in 2016 exceeds 10% of the population on average and more than 16% of the population in Below Normal, Dry, and Critically Dry water year types. See WaterFix Biological Assessment at 6-97 [Footnote 23: The Biological Assessment for WaterFix is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhibit_svwu_1/. Chapter 6 is enclosed with this letter for incorporation in the record. See Exhibit R [ATT18].]. As such, the proposed action appears likely to significantly increase entrainment mortality of Delta Smelt, which scientific studies have demonstrated is a significant cause of the species' decline. See, e.g., Kimmerer, Wim and Rose, Kenneth 2018. Individual-Based Modeling of Delta Smelt Population Dynamics in the Upper San Francisco Estuary III. Effects of Entrainment Mortality and Changes in Prey. Transactions of the American Fisheries Society, Vol. 1. [Footnote 24: A copy of this study is enclosed with this letter for inclusion in the record. See Exhibit S [ATT19]. There is no scientific justification for increasing entrainment mortality of Delta Smelt given current population levels.	With respect to the commenter's suggestion that Alternative 1 would significantly increase entrainment of larval and juvenile Delta Smelt, please see response 45-27. Although the commenter cites estimates of larval and juvenile Delta Smelt entrainment from the California WaterFix Biological Assessment, such estimates are intended to facilitate comparisons between different operational scenarios rather than being accurate estimates of actual entrainment, and they do not account for real-time operational adjustments. Note also that the California WaterFix Biological Assessment provides other estimates of larval entrainment based on DSM2 particle tracking modeling that are appreciably lower than those provided by the commenter (see p.6-117). The California WaterFix Incidental Take Permit Application (ICF International 2016, p.4-186) discusses the same results used in the Biological Assessment and notes that actual take of Delta Smelt was appreciably lower than authorized take levels from the 2008 USFWS Biological Opinion.
45	29	Reliance on real time operations to minimize entrainment mortality as proposed and analyzed in the DEIS is inadequate and not reasonably certain to occur because:	With respect to the commenter's allegation that real-time operations are not reasonably certain to occur, it is not appropriate to compare to the situation that existed at the time of prior biological opinions because considerably more

Ltr#	Cmt#	Comment	Response
		- Reclamation proposes that it and DWR shall make final decisions on OMR and other protective actions: The Service's 2008 biological opinion required that the Service make the final determination of OMR flows, because of the repeated examples of Reclamation and DWR rejecting recommendations of biologists from state and federal agencies to reduce pumping to protect Delta Smelt under prior biological opinions. The district court explicitly found that the adaptive management provisions of the 2005 biological opinion were unlawful because while there was a mandatory process (DSRAM), there was no requirement to ensure that any specific protective operations were implemented. Natural Resources Defense Council v. Kempthorne, 506 F.Supp. 2d 322, 352-56 (2007). Moreover, in recent years the Service has repeatedly rejected the advice of the Smelt Working Group to allow increased pumping and more negative OMR levels, and has generally allowed higher pumping levels than the expected OMR levels identified on page 360 of the 2008 biological opinion, even as the population continued to decline and the incidental take limit was nearly exceeded in several years. Real time operations are not reasonably certain to protect Delta Smelt, based on recent historical evidence. • Existing Monitoring Programs Are Inadequate Given Current Population Levels: While the proposed action would rely on the Enhanced Delta Smelt Monitoring (EDSM), individual scientists and peer review panels have concluded that EDSM cannot accurately estimate the distribution of Delta Smelt populations given the current, extremely low estimates of abundance. • Entrainment Events Must be Managed Proactively, not Retroactively: Once an entrainment event begins, such as by the creation of a turbidity bridge, it is difficult to effectively prevent salvage and entrainment losses. Moreover, the failure to manage OMR proactively to avoid entrainment can not only harm Delta Smelt, but can also reduce water supply, resulting in less negative OMR levels over a longer duration to manage and reduce entrainment. The DEIS fails to present and provide an accurate scientific analysis that addresses the information presented above. An accurate scientific analysis of all relevant, high quality information would result in the conclusion that increased entrainment resulting from implementation of the proposed action will jeopardize Delta smelt. The DEIS should be revised and recirculated to provide this analysis in order to ensure it takes the hard look at the proposed action's environmental consequences as required by NEPA.	information is now known regarding factors influencing entrainment. Alternative 1 has specific criteria described to which Reclamation and DWR will operate in order to limit entrainment risk, the first of which is Integrated Early Winter Pulse Protection (First Flush Turbidity Event) (see EIS in Section 3.4.5.6, Old and Middle River Management), which it is anticipated would be triggered considerably more frequently than the analogous action from the USFWS 2008 biological opinion, e.g., under historical conditions from 2009–2019, first flush protection was triggered twice, whereas under Alternative 1, it would have been triggered eight times. With respect to the commenter's suggestion that existing monitoring programs are inadequate given current population levels, it should be noted that not all aspects of Alternative 1 are reliant on real-time monitoring, e.g., the Integrated Early Winter Pulse Protection (First Flush Turbidity Event) draws on flows and turbidity criteria, or monitoring. As was the case with the institution of the Enhanced Delta Smelt Monitoring program during the period of the USFWS 2008 biological opinion, it is reasonable to assume that other survey methods may be developed as necessary, potentially including tools such as environmental DNA that is currently being studied. With respect to the commenter's suggestion that there should be proactive management of entrainment, Alternative 1 encourages proactive management of turbidity bridges, please see Section 3.4.5.6.2 of the EIS regarding additional real-time OMR restrictions and performance objectives and turbidity bridge avoidance. Please also see Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science and sufficiency of analyses. Refer to Master Response 1, General Comments, for more information regarding the requirements for a supplemental EIS and the CEQA process being led by the California Department of Water Resources.

Ltr#	Cmt#	Comment	Response
45	30	The DEIS Does Not Provide an Accurate Scientific Analysis of Information indicating that the Proposed Action Would Result in Unsustainable Temperature-Dependent Mortality of Winter-Run Chinook salmon Substantial information discussed below demonstrates that the proposed action would result in unsustainable temperature-dependent mortality of winter-run Chinook salmon and spring-run Chinook salmon in critically dry years and droughts that exceed the thresholds that NMFS has previously identified are necessary to avoid jeopardy. Nevertheless, the DEIS does not present a complete and accurate scientific analysis based on the best available science, including this information. Absent such an analysis, the DEIS fails to provide the required hard look at the impacts of the proposed action on endangered species. In its 2017 draft RPA amendment, NMFS concluded that temperature dependent mortality of winter-run Chinook salmon should never exceed 30 percent, while noting that, “These temperature dependent mortality numbers are preliminary and subject to further analysis to understand whether the population can withstand this level of mortality and still be viable.” In contrast, the modeling in the DEIS shows that the proposed action would result in more than double that level of mortality in critically dry years using the Martin model [See Exhibit 2], and that temperature-dependent mortality would exceed NMFS’ targets in all water year types [Footnote 25: Substantially greater temperature-dependent mortality would occur under full contract deliveries to Sacramento River Settlement Contractors. For instance, Appendix A to the Bureau of Reclamation’s December 2018 Environmental Assessment for the Addendum to the Coordinated Operating Agreement found that temperature dependent mortality of winter-run Chinook salmon would exceed 25% in 50% of years, whereas this biological assessment finds that temperature-dependent mortality would be 6% in 50% of years under the COS baseline. The reduction in water deliveries to Sacramento River Settlement Contractors in this biological assessment, as discussed infra, appears to be the largest difference between these modeling efforts by the Bureau of Reclamation. The Bureau of Reclamation’s December 2018 Environmental Assessment for the Addendum to the Coordinated Operating Agreement is available at https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=36503 and is enclosed with these comments to be included in the record. See Exhibit T [ATT20].].	Please refer to response to comment 45-29. Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. It is unclear whether NMFS' targets from the 2017 Shasta RPA amendment consider the available cold water pool resources by water year type. Regarding the comparison to historical mortality, NRDC's table shows that Alternative 1 is 1 percentage point higher in temperature-dependent egg mortality than NMFS' estimate of temperature-dependent mortality from 1996-2016 for all years except for Critical years, and in Critical years, Alternative 1 results in 7% lower temperature-dependent egg mortality. Arguably, this is an improvement over NMFS' historical estimates of mortality, since as we saw in 2014, Critical years are key for maintaining populations of Winter-run Chinook salmon. A reduction in mortality in Critical years may be more important than 1% more mortality in other years (when there are expected to be higher populations overall). Refer to the response to comment 45-22 regarding the relationship of the Endangered Species Act Section 7 process and the NEPA process. Also refer to Sectoin3.4.8.5, Drought and Dray Year Actions, regarding the commitment to meet and confer with Sacramento River Settlement Contractors on voluntary measures during periods of drought.

Ltr#	Cmt#	Comment	Response
		The Bureau of Reclamation's estimates of temperature-dependent mortality under the proposed action are greater than NMFS' estimate of temperature-dependent mortality from 1996-2016 for most water year types, and they are relatively similar in critically-dry water year types. NMFS has already determined that recent levels of temperature-dependent mortality exceeded the incidental take limits in the 2009 biological opinion and required reinitiation of consultation and revision of the Shasta RPA [See Exhibit 3].	
45	31	[Exhibit 3: Table showing mortality by Water Year type—Temperature dependent and BA Proposed Action]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments; see response to Comment 45-30. No further response is necessary.
45	32	The DEIS underestimates temperature-dependent mortality because CalSim modeling assumes perfect foresight in managing the cold-water pool in Shasta Reservoir throughout each year. However, NMFS has repeatedly concluded in recent years that the Bureau of Reclamation's temperature model "assumes operations can achieve temperature targets that are either not realistic or not supported by the historic record," that "Reclamation has historically overestimated their ability to achieve the temperature compliance point," that Reclamation repeatedly refuses to use accurate or even conservative assumptions in the model, and that Reclamation's temperature model generally performs very poorly. Reclamation has repeatedly overestimated its ability to meet temperature control, with disastrous results in 2015. Because of the lack of adequate models and assumptions to manage temperature within the year, actual operations will likely exceed estimated temperature-dependent mortality.	Since Reclamation's temperature management tiers are based on May 1 cold water pool volumes, and temperature compliance does not start until May 15, operators in real-time would know the May 1 cold water pool volume prior to temperature management season, just as the model does. Thus, the tier strategy would be determined the same in real life as in the model. However, as is noted in the comment, in real-time operators will be using approximately 7 or 10-day out weather forecasts to adjust TCD operation to meet temperature compliance, which the model does not simulate. Reclamation performed a sensitivity analysis on temperature performance in Tier 3 years, which is in Appendix F, Attachment 1. The temperature performance in the Alternative 1 Draft EIS model was based on monthly temperature targeting, in accordance with CalSim's monthly hydrology. However, in real-time, operators would adjust at scales less than 1 month, to changes in projected temperatures downstream. This should allow better temperature performance and a reduction in the magnitude of effects indicated by the conservative modeling approach relied on in the EIS alternative 1 modeling. The sensitivity analysis uses daily temperature targets, with perfect foresight, to try to better mimic real-time operations. Reclamation has included a component in Alternative 1, Temperature Modeling Platform, that is evaluated at a programmatic level. This platform would work with stakeholders including the NMFS Science Center to update the reservoir water temperature model used for Shasta and Keswick operations to CE-QUAL-W2. This effort is currently underway, but the model has not been completed and could not be evaluated at a project level in this EIS.
45	33	The proposed action would eliminate the Shasta Dam carryover storage requirements and related requirements of Action I.2 of the 2009 biological	As stated in Reclamation's March 22, 2017 response to the NMFS Shasta RPA Amendment, "Reclamation supports an RPA that is focused on the

Ltr#	Cmt#	Comment	Response
		opinion and the operational requirements in the 2017 draft RPA amendment. In the 2017 draft Shasta RPA amendment, NMFS concluded that carryover storage requirements in April and September and reservoir release limits were necessary to ensure temperature compliance. For instance, NMFS concluded that, "it has become clear from Shasta operations in the drought years that an end of April storage requirement is also a critical metric towards meeting temperature compliance throughout the temperature management season." However, the proposed action would eliminate any and all carryover storage requirements, reservoir release limits, or other limitations on Reclamation's operations. Without any carryover storage and reservoir requirements, it is not reasonably certain that adequate cold water pool resources will be available in future critically dry years and droughts.	accomplishment of biological objectives, rather than prescriptive operations that limit the ability to flexibly operate the entirety of the Central Valley Project to better support the full range of requirements and beneficial uses of the system." As described in the EIS Chapter 3, Section 3.4.1.4, Coldwater Pool Management, Alternative 1 attempts to do this, focusing on the accomplishment of biological objectives of relevance to the fish - temperature dependent mortality and egg survival - rather than carryover storage requirements. As described in Chapter 3, Section 3.4.1.4.3, Upper Sacramento River Performance Metrics, Reclamation's preferred alternative includes performance metrics related to both temperature-dependent egg mortality and egg survival, and if Reclamation's operations do not meet the performance metrics, independent panels would occur. In addition, as described in the EIS Chapter 3, Section 3.4.1.8, Intervention Components, if survival is lower than 15% for two years in a row, Alternative 1 requires Director level meetings to avoid 3 years of low survival. Furthermore, it is to Reclamation's benefit in operating the Central Valley Project to conserve storage to the greatest extent possible. Greater storage levels help to ensure higher allocations to water users as well as improved cold water management for fish. Reservoir management is a core component of Reclamation's operators' job on a day to day basis. End of season carryover storage targets, in particular, reduce Reclamation's flexibility. They may require lower releases and deliveries throughout the year to meet an end of season target, and then the conserved water may then be spilled due to flood conservation space requirements during the winter. This significantly affects the overall reliability of the CVP for an uncertain result. The spring hydrology is the single greatest factor influencing cold water pool storage. Alternative 1 thus focuses on cold water pool management strategies based on the beginning of May cold water pool available in Shasta reservoir. However, Alternative 1 also includes actions to build storage, including fall winter redd maintenance.
45	34	The proposed action would eliminate all of the consultation and real time operations processes that involve NMFS, including the requirement for consultation prior to the initial CVP allocation. As NMFS has explained, the RPA requires that: NMFS shall review the February forecast to determine whether the predicted delivery schedule is likely to leave sufficient water for temperature management to meet Endangered Species Act (ESA) requirements, and provide a written evaluation to Reclamation prior to Reclamation making the first allocation announcements. The objective of this RPA action is to use a	Alternative 1 includes extensive coordination with NMFS consistent with similar provisions in the 2009 RPA. See EIS Chapter 3, Section 3 regarding Cold Water Pool Management and Governance for further information. Coordination between Reclamation and NMFS is further described in Section 3.4.1.4.2, Commitment to Cold Water Management Tiers. Also see Section 3.4.1.4.1, regarding the role of the SRTTG.

Ltr#	Cmt#	Comment	Response
		conservative forecast as early as possible to protect the cold water pool in Shasta Reservoir so that suitable habitat can be maintained downstream during the summer and fall for federally listed endangered Sacramento River winter-run Chinook salmon (Oncorhynchus tshawytscha), and threatened Central Valley spring-run Chinook salmon (O. tshawytscha). Letter from NMFS to Bureau of Reclamation dated February 19, 2019 regarding Transmittal of February Reservoir Operations Forecast per RPA Action I.2.3. [Footnote 26: A copy of Letter from NMFS to Bureau of Reclamation dated February 19, 2019 regarding Transmittal of February Reservoir Operations Forecast per RPA Action I.2.3. is enclosed to be included in the record. See Exhibit U [ATT21]. It is also available online at https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY%202019/nmfs_response_to_the_bureau_of_reclamation_s_february_forecast_-_february_19__2019.pdf]. Instead, the proposed action would eliminate this essential consultation process and give the Bureau of Reclamation virtually unfettered discretion in how to manage Shasta Reservoir under the tiered temperature management strategy. The proposed action has no limit on Reclamation’s discretion to switch between tiers, e.g., from Tier 3 to Tier 4 temperature management operations, within a year. As a result, temperature management under Tiers 1-3 is not reasonably certain to occur, and NMFS cannot rely on the more protective operations in Tiers 1-3 being implemented to protect ESA-listed species.	Refer to Section 3.4.1.4.1 for more details on the temperature management plan. Also see Figure 3.4-3, Decision Tree for Shasta Reservoir Temperature Management, for additional information. Alternative 1 also includes additional specific coordination with NMFS, as described in Section 3.4.1.4.3, Upper Sacramento Performance Metrics.
45	35	Under the proposed action Reclamation would not perform the first temperature modeling run until April, after initial CVP water supply allocations (including allocations to Sacramento River Settlement Contractors) have been made, despite the fact that Shasta reservoir releases in April and May for the Sacramento River Settlement Contractors significantly contributed to Reclamation’s failure to meet temperature control in 2014 and 2015. Indeed, NMFS concluded in July 2015 that, “It is now very clear through evaluating operations in both 2014 and 2015 that the volume of cold water available for real-time management in June through October is highly dependent on Keswick releases in April through early June” [Footnote 27: Letter from NMFS to Reclamation dated July 1, 2015 at page 5, available at “https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/nmfs_determinations_on_tuc_petition_and_sacramento_river_tmp_-_july_1__2015.pdf and enclosed with this letter for inclusion in the	Please see response to comment 45-34.

Ltr#	Cmt#	Comment	Response
		record. See Exhibit V [ATT 36].]. Relatedly, the water storage criteria for the different tiers in the tiered temperature management strategy are generally based on the size of the cold water pool at the beginning of May, but it appears that data generally will not be available until after the Bureau of Reclamation announces initial water supply allocations and begins making reservoir releases to meet Sacramento River Settlement Contractor demands, which will significantly impair the ability to meet temperature compliance. By failing to prepare temperature modeling runs or temperature management plans before making initial allocations, Reclamation will lack data to determine whether initial allocations are consistent with ensuring that sufficient cold water will be available to protect winter-run Chinook salmon and other ESA-listed species.	
45	36	The effects of climate change are likely to result in even higher levels of temperature dependent mortality after 2025. However, the DEIS fails to model or analyze long term effects of the project with climate change.	The EIS appropriately includes climate change in the analysis through 2030. Reclamation proposes to operate the CVP (in coordination with the SWP) through the end of 2030. Reclamation chose 2030 due to increasing uncertainty about meteorological variability into the future as well as several large ongoing projects that may require reinitiation of consultation that could become operational in the 2030's. The consultation period is also consistent with the prior consultation period incorporated into biological opinions issued by USFWS and NMFS in 2008 and 2009, respectively, for CVP operations. Please see Section 5.21, Climate Change, for additional information regarding how climate change was addressed in the EIS. Please also see Appendix F, Modeling, Attachment 2 for additional information regarding climate change modeling.
45	37	The analysis presented in the DEIS significantly underestimates temperature-dependent mortality of winter-run Chinook salmon that is likely to occur under the proposed action, and temperature-dependent mortality will likely significantly exceed the estimates in the DEIS.	Please see response to Comment 45-30.
45	38	In addition, NMFS has previously concluded that use of a 56°F daily average temperature (DAT) at the location of salmon redds is not scientifically supported and is not adequate to protect the earliest life stages of winter-run Chinook salmon because daily maximum temperatures can exceed 60°F and cause lethal and sub-lethal adverse effects while meeting a daily average of 56°F. Instead, NMFS has concluded that the best available science supports use of a 55°F 7 Day Average of the Daily Maxima (7DADM) temperature threshold at the location of the most downstream salmon red [Footnote 28: 2017 Draft RPA at 228-229.]. Despite these prior findings, the proposed action would manage to meet 56°F daily average temperatures at Clear Creek Gauge	As described in Appendix D, Alternatives Development, Alternative 1 includes operating to 53.5 °F in the Sacramento River at the Clear Creek gauge whenever possible in accordance with Martin (2017), and only drops to meeting a 56 °F compliance target when Reclamation has determined that not enough cold water pool is available to meet 53.5 °F. Furthermore, in Tier 3 Reclamation has proposed to reduce temperatures below 56 °F daily average temperature during the critical period for the Winter-run Chinook salmon eggs as cold water is available. In accordance with NEPA, Reclamation has performed temperature modeling and temperature-dependent egg mortality modeling on operations under Alternative 1 using available modeling tools.

Ltr#	Cmt#	Comment	Response
		under Tier 3, and to plan to exceed 56°F under Tier 4. Such an approach fails to use the best available science.	Reclamation addressed shortcomings of using 7DADM compliance targets in Chapter 5, Section 5.6.3.1, Upper Sacramento River Seasonal Operations including Shasta Cold Water Pool Management, of the ROC on LTO BA, citing the 2017 Long-term Operations Biological Opinions (LOBO) Biennial Science Review (Gore, 2018). This report includes the following statements: "Managers expect that water operations could be more difficult under 7DADM due to the time lag inherent in its 7-day average. For example, daily water temperatures could have already turned to an upward trend, even as 7DADM is still falling, due to lag effects. Thus, water operations based on 7DADM compliance would require some forecasting." Please refer to Master Response 7, Aquatic Resources, regarding water temperature and specifically the comparison of model results with 7DADM criteria. Further statements in LOBO Review note that current real-time operations based on daily average temperatures also require some forecasting "because dam releases and downstream temperatures do not respond immediately to flow-change decisions." The LOBO Review concludes that the advantages to the salmon of using the proposed 7DADM have not been demonstrated. Reclamation noted that the BA referenced the 7DADM criteria as general characterizations of the temperature tolerances of lifestages and species, with the understanding that it may be inappropriate to use these as compliance metrics in impact assessments. Criteria based on local temperature tolerance studies would be preferred but are not available.
45	39	Accurate and complete scientific analysis of all available information indicates that the proposed action will result in unsustainable temperature dependent mortality of winter-run chinook salmon. However, the DEIS does not undertake this analysis as required by NEPA, and as such fails to adequately analyze this impacts of the project or take the hard look required.	Please see response to comment 45-30.
45	40	The DEIS Fails to Accurately Assess the Adverse Effects of Increased Delta Pumping Under the Proposed Action on Endangered Salmonids. Substantial information discussed below also demonstrates that the proposed action would significantly increase South of Delta exports and increase the magnitude, frequency, and duration of reverse flows in Old and Middle River, adversely affecting migrating salmon and steelhead and designated critical habitat. However, the DEIS fails to accurately evaluate the impacts of increased pumping on salmon and steelhead.	The alternatives include a range in exports, from decreased exports under Alternative 4 to the highest increase in exports under Alternative 2 and 3. The DEIS discusses the uncertainty around this topic in Section 1.4.2.1. The DEIS evaluates the impacts of increased pumping on salmon and steelhead in Sections 5.9.1.7.1 for Winter-run, 5.9.1.7.2 for Spring-run, 5.9.1.7.3 for Fall-run, 5.9.1.7.4 for Steelhead, and 5.9.1.7.5 for Green Sturgeon, as well as in Appendix O. Regarding storm events, Reclamation's revised modeling of Alternative 1 (Appendix F, Modeling Attachment 1) includes assumptions that storm flexibilities would occur in Wet, Above Normal, and Below Normal

Ltr#	Cmt#	Comment	Response
		First, as explained more fully below, the DEIS does not accurately model or analyze the adverse effects of OMR waivers during storm events. See below. Second, the proposed action would significantly increase pumping and OMR reverse flows during April and May because it proposes to eliminate Action IV.2.1 in the 2009 NMFS biological opinion (San Joaquin River inflow: export action). Third, the proposed action would allow for increased opening of the Delta Cross Channel gates during periods of salmonid migration. Taken together, the proposed action is likely to result in increased entrainment mortality and reduced survival for salmonids and Central Valley steelhead migrating through the Delta. For instance, in its recent biological opinion for the California WaterFix project, NMFS concluded that reduced exports from the South Delta pumping plants and more positive Old and Middle River flows would increase survival through the Delta for salmon and steelhead migrating from both the San Joaquin River and Sacramento River. Consistent with that analysis, increased pumping and more negative Old and Middle River flows (as would occur with the proposed action) would reduce migratory survival through the Delta. In addition, NMFS found that a 1-2% reduction in through Delta survival would have significantly greater population level impacts and would be “a notable reduction for an endangered species, especially if it occurs on a consistent (e.g., annual) basis.” Moreover, in its recovery plan NMFS identified specific through-Delta survival rates for each ESA-listed salmon species that are necessary for the species’ recovery [Footnote 29: Recovery Plan for ESUs of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of California Central Valley Steelhead, NMFS, 2014. This document is enclosed with this letter for inclusion in the record. See Exhibit W[ATT2].]. Those through-Delta survival rates are significantly higher than current estimates of survival through the Delta, yet the proposed action would reduce survival of salmon migrating through the Delta. The DEIS fails to consider whether this would jeopardize the recovery of ESA-listed species.	water years if neither the turbidity bridge or first flush event is in effect, at an OMR of -6000 cfs for 7 days each in January and February. In Dry years, Reclamation assumes a storm event flexibility of -6000 cfs OMR for 7 days in January or February, but not both. These assumptions differ from the original Alternative 1 modeling by adding in Wet year storm event flexibilities. Originally Reclamation did not include storm event flexibilities in wet years because often in Wet years South of Delta reservoirs are full and Reclamation is unable to take additional water due to lack of space. However, for purposes of the EIS and ensuring sufficient analysis of possible impacts, Reclamation has modified the modeling to add additional storm OMR flex events in Wet years. The San Joaquin Inflow to Export Ratio required in 2009 Biological Opinion RPA Action IV.2.1. is replaced in Alternative 1 with OMR restrictions based on fish presence and cumulative and single-year loss thresholds. Regarding the Delta Cross Channel, Alternative 1 replaces NMFS’ approval of 5-day DCC tests, and allows Reclamation apply its expertise to predict when water quality standards would be exceeded, in contrast to the current RPA, which requires a violation of D-1641 before gates are opened. The Draft EIS states that: "Negative effects from increased entrainment probability in the spring would likely be offset by increased flow in the Sacramento River mainstem during spring, which would increase survival and reduce routing into the interior Delta where survival is lower regardless of flows." Reclamation does not make jeopardy determinations. This is a requirement under the ESA and determinations are done by USFWS and NMFS. Further background on the scientific basis for evaluating export operation alternatives with regard to potential impacts to Chinook salmon and steelhead can be found in Appendix O (e.g., Section O.2.10.2.4 Fish Passage and Entrainment, Section O.3.3.8.3 Sacramento River Winter-run Chinook Salmon, Section O.3.3.8.4 Sacramento River Spring-run Chinook Salmon, Section O.3.3.8.5-7 Sacramento River Fall-run Chinook Salmon, and Section O.3.3.8.8 Central Valley Steelhead).
45	41	We [Natural Resources Defense Council] note that reliance on real time operations to minimize entrainment mortality as proposed is inadequate and not reasonably certain to occur because the proposed action would have Reclamation and DWR make final decisions on OMR and other protective actions. NMFS’ 2009 biological opinion required that the Service make the final determination of OMR flows, because of the repeated examples of	Alternative 1 includes a variety of actions where Reclamation and DWR will seek technical assistance from NMFS, USFWS, and in some cases DFW. Alternative 1 says, for the OMR action for larval and juvenile smelt: "Reclamation and DWR will seek technical assistance from FWS and DFW to determine whether or not an operational action protective of larval and juvenile delta smelt, which may include more positive OMR flows, should be taken."

Ltr#	Cmt#	Comment	Response
		Reclamation and DWR rejecting recommendations of biologists from state and federal agencies to reduce pumping to protect ESA-listed species under the prior biological opinions. In contrast, under the proposed action, Reclamation and DWR will have sole discretion over water project operations and allows for multiple waivers of OMR criteria.	Alternative 1 also states: "During the year, if Reclamation and DWR exceed the average annual loss from 2010 through 2018, Reclamation and DWR will review recent fish distribution information and operations with the fisheries agencies at WOMT and seek technical assistance on future planned operations. Any agency may elevate from WOMT to a Directors discussion, as appropriate." Alternative 1 states that Reclamation and DWR will seek NMFS technical assistance on the risk assessments for not following the -2500 and -3500 cfs OMR triggers and real-time operations. Finally, Alternative 1 also states that "If, during real-time operations, Reclamation and DWR exceed the single-year annual loss threshold, Reclamation and DWR would immediately seek technical assistance from USFWS and NMFS, as appropriate, on the coordinated operation of the CVP and SWP for the remainder of the OMR management period."
45	42	Because the DEIS fails to accurately model the effects of the proposed action, address how reductions in entrainment due to real time operations are not reasonably certain to be implemented, and accurately analyze how the proposed action would significantly increase pumping and reduce survival through the Delta, the DEIS fails to account for high quality information and provide an accurate scientific analysis of whether operations of the CVP and SWP will jeopardize ESA-listed species and adversely modify designated critical habitat. The substantial information available indicates that increased Delta pumping under the proposed action will in fact have significant adverse effects on endangered salmonids and their critical habitat. However, the inadequacies of the analysis and failure to consider all available information in the EIS results in a failure to take the required hard look at the consequences of increased pumping on endangered salmonids. The DEIS should be revised and recirculated to address this failure.	The effects of all alternatives were modeled, including specific assumptions in the operational model for Alternative 1 for storm-event OMR flexibility and OMR loss thresholds. Please see Appendix F for modeling assumptions. Once Reclamation determines a selected alternative in the Record of Decision and begins implementing under new Biological Opinions, for ESA purposes, if "new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered", or "if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion", then reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service in accordance with 50 CFR 402.16. The EIS does analyze how Alternative 1 would increase pumping, and includes language that recognizes the increased entrainment in the spring in Alternative 1 as compared to the No Action Alternative in Section 5.9.1.7 and Appendix O. Again, the action agency does not make a determination of jeopardy, under the Endangered Species Act Section 7(a)(1) consultation process this is the USFWS and NMFS responsibility in formal consultation. Discussion of jeopardy is not required in NEPA.
45	43	The DEIS Fails to Assess the Effects of Reduced Flows on the Survival and Abundance of Listed Salmonids Recent scientific studies demonstrate that the migratory survival and subsequent abundance of winter-run Chinook salmon, spring-run Chinook salmon, and fall-run Chinook salmon (which are an important prey species for ESA-listed Orcas) is significantly impaired by lower flows in the Sacramento	As shown in EIS Chapter 5, Section 5.2.1.1, Trinity, Sacramento, Feather, and American Rivers and Clear Creek, in Figure 5.2-1. Sacramento River Flow Downstream of Keswick Reservoir, Above Normal Year Average Flow, as well as in Attachment 3-2, Flow Results, (CalSim II) Tables 15-1 to 15-4 and Figures 15-1 to 15-18, Alternative 1 has higher flows in the Sacramento River in December through June than the No Action Alternative, and lower flows in September and November. However, updated Alternative 1 modeling

Ltr#	Cmt#	Comment	Response
		River and tributaries during key migration periods, due in part to operations of the CVP and SWP. For instance, Michel 2018 found that freshwater survival for migrating salmon had a strong, statistically significant positive relationship with smolt to adult ratios (SAR) (r2=0.62), indicating that freshwater survival was an important factor in determining adult abundance [Footnote 30: Michel 2018 is enclosed with this letter for inclusion in the record. See Exhibit X [ATT23].]. That study also found that flows during juvenile migration explained more than one third of the variability in smolt to adult ratios for winter-run Chinook salmon, fall-run Chinook salmon, and late-fall run Chinook salmon. Henderson et al 2018 found that flows in the Sacramento River are the primary driver of migratory survival, with lower survival at lower flows [Footnote 31: Henderson, et al 2018 is enclosed with this letter for inclusion in the record. See Exhibit DD [ATT28].]. Work by Jeremy Notch, Flora Cordoleani, and other scientists with NMFS and the California Department of Fish and Wildlife have demonstrated that instream flows have a significant, positive effect on the migratory survival of spring-run Chinook salmon such that survival is higher at higher flows. See, e.g., Cordoleani et al 2018 [Footnote 32: Cordoleani et al 2018, is enclosed with this letter for inclusion in the record. See Exhibit Y [ATT24].] [Footnote 33: To the extent that these flow-survival relationships are not already incorporated into the Winter Run Life Cycle Model, the DEIS needs to otherwise account for these flow-survival effects to ensure that the agency uses the best available science.]. Similarly, studies by Russ Perry and other USGS scientists (which were used by NMFS in the WaterFix biological opinion) found that there is a strong flow-survival relationship between Sacramento River flow and survival through the Delta to Chipps Island, which results in increased survival through the Delta as a result of higher inflows to the Delta [Footnote 34: Perry et al is enclosed with this letter for inclusion in the record. See Exhibit Z [unable to download –error in file].]. Other analyses have concluded that increased Delta outflow during the winter and spring months results in greater abundance and/or recruitment of sturgeon. However, the DEIS fails to consider these scientific studies and fails to accurately assess the impacts of reduced flow from CVP/SWP operations on survival.	(Appendix F, Modeling, Attachment 1) shows more similar flows to the No Action Alternative in September, thought inclusion in the model of the Summer-Fall Delta Smelt Habitat action, revised in response to comments. In fact, all Alternatives show generally the same, or higher, flow in the Sacramento River in all months except for September and November. Therefore, the alternatives in the EIS in fact increase flows, benefiting juvenile salmonids as documented by these studies you reference. The Draft EIS references the work of Cordoleani, Perry, and Michel, and specifically notes in Section 1.4 that "Generally, there is considerable support in the scientific literature for the importance of river flows to the health of salmonid populations (Nislow and Armstrong 2012)." In Appendix O, the EIS includes a discussion of the potential impacts of the reduced September and November flows, and references the work of Flora Cordoleani. For example, "Results from a more recent analysis suggest that the reduction in November flows from the No Action Alternative to Alternative 1 during wet and above normal water years could adversely affect Winter-Run juveniles emigrating at that time. The NMFS Southwest Fisheries Science Center ran statistical models using 2012-2017 tagging data from Spring-Run Chinook Salmon and Fall-Run Chinook Salmon and found a significant increase in smolt survival when Sacramento River flow at Wilkins Slough was above 9,100 cfs during the smolts out-migration period (Cordoleani et al. 2019). The CalSim II results for November at Wilkins Slough indicate that, under the No Action Alternative, 50% of years would have mean monthly flows that exceed the 9,100 cfs threshold, but that under Alternative 1 only 20% of years would exceed the threshold (Figure O.3-29)." The Draft EIS also references the work of Russ Perry, for example as stated in Section 5.9.1.7.1, "Under all action alternatives flows in the Sacramento River would be greater during the Winter-Run migration period which would increase survival and reduce routing into the interior Delta at Georgiana Slough (Perry et al 2015)." In Appendix O, Section O.2.10.2.4 , the EIS states "Michel et al. (Michel 2010; Michel et al. 2015) used acoustic telemetry to examine survival of Late FallRun Chinook Salmon smolts outmigrating from the Sacramento River through the Delta and San Francisco Estuary. Survival was lowest in the freshwater portion (Delta) and the brackish portion of the estuary relative to survival in the riverine portion of the migration route."
45	44	The proposed action would reduce flows in the Stanislaus River, despite scientific evidence that survival of migrating salmonids in the Stanislaus River is strongly and positively correlated with the volume of flow during the winter	Reclamation has proposed reduced wet year flows on the Stanislaus River as a means to balance competing demands on the over-allocated New Melones Reservoir. On December 12, 2018, through State Water Board Resolution No.

Ltr#	Cmt#	Comment	Response
		and spring months. See, e.g., Zeug et al 2014; [Footnote 35: Zeug et al 2014 is enclosed with this letter for inclusion in the record. See Exhibit AA [ATT25].] see also Buchanan et al 2018 (steelhead) [Footnote 36: Buchanan, et al, 2014 is enclosed with this letter for inclusion in the record. See Exhibit BB [ATT26].]. NMFS has previously concluded that the minimum flows in the 2009 biological opinion are necessary to avoid jeopardy, and the Recovery Plan finds that the minimum flows in Appendix 2-E to the 2009 biological opinion are a priority 1 recovery action. This element of the proposed action (reduced flows in the Stanislaus River) also is inconsistent with the State of California's Bay-Delta Water Quality Control Plan as amended in 2018, and Stanislaus River operations under both the COS baseline and the proposed action would result in flows and water project operations that violate Reclamation's legal duty under its water rights to meet D-1641 Vernalis pulse flows in all years. The proposed action conflicts with and prevents attainment of numerous priority 1 recovery actions identified in the Recovery Plan, such as new Delta flow objectives that mimic natural flow characteristics, pulse flows of 17,000 cfs or higher at Freeport during the December-April outmigration period, and minimizing the frequency, magnitude and duration of reverse flows in Old and Middle River.	2018-0059, the State Water Board adopted the Plan amendments and Final SED establishing the Lower San Joaquin River flow objectives and revised southern Delta salinity objectives. However, Resolution 2018-0059 states, "The Plan Amendments adopted by this resolution are not self-implementing. Subsequent regulatory actions are required to implement the objectives and make them enforceable. The December 1, 2019 date of Resolved ¶ 7 provides a path for acceptance and approval of a voluntary agreement before regulatory actions to amend the water rights of water users on the Tuolumne River would occur and with sufficient time to complete any additional planning actions well in advance of the date that the LSJR flow objectives will be fully implemented." Therefore, since implementation of the objectives has yet to be determined, Reclamation did not include a means to implement these objectives in its alternatives in the DEIS. Furthermore, as stated in Reclamation's March 16, 2017 comment letter on the Phase 1 Supplemental Environmental Document to the SWRCB, "Reclamation has not been able to operate to the D-1641 spring pulse flows since the expiration of the San Joaquin River Agreement." As described in the EIS, Section 3.7, Alternative 4, Alternative 4 includes increased instream flows in the Sacramento, Feather, and American Rivers. As described in the EIS, Section 3.4, Alternative 1, Alternative 1 includes pulse flows of at least 10,000 cfs during the outmigration period. Alternative 1 also includes mechanisms to limit reverse flows in Old and Middle River. Refer to Appendix O, Section O.3.3.6, Stanislaus River, for analysis of the impacts of reduced flows on salmonids in the Stanislaus River.
45	45	Reduced flows will cause significant harm to endangered salmonids and adversely affect their critical habitat. The failure of the DEIS to adequately address and analyze these impacts on endangered salmonids results in a failure to take the hard look required by NEPA.	See response to comment 45-44.
45	46	The DEIS Fails to Analyze and Disclose the Likely Environmental Effects of the Proposed Project and Alternatives Because it Fails to Consider Full Implementation of the Water Supply Contracts with Sacramento River Settlement Contractors or the Effects of the Contractors' Diversions Over the Full Duration of the Contracts To satisfy NEPA's information disclosure and provide accurate scientific analysis and scientific integrity necessary to support the required hard look at environmental consequences of the action in the DEIS, Reclamation must include the effects of water diversions at full contract amounts for the	As is detailed in Section 3,2.2 of the EIS, "Reclamation is not proposing to execute any new contracts or amend any existing contracts under the action alternatives. The action alternatives assess operation of the CVP and SWP to deliver water under the terms of all existing contracts up to full contract amounts, including full Level 4 refuge contract amounts." As indicated in Appendix F, the CalSim modeling assumption made for demands was "Land use-based, full buildout of contract amounts, except for Settlement Contractors represented with historical diversions." Reclamation selected 2030 as the time frame for the modeling in the EIS due to increasing uncertainty about

Ltr#	Cmt#	Comment	Response
		Sacramento River Settlement Contractors, as well as the effects over the full duration of the contracts. However, the analysis and modeling in the DEIS, which is based on the modeling in the Biological Assessment, fails to adequately consider the full effects of implementation of Reclamation's contract with the Sacramento River Settlement Contractors, because the it fails to model or analyze: (1) the effects of full contract deliveries, instead only analyzing recent historic deliveries, which are significantly lower than full contract amounts; and, (2) the effects of full contract deliveries on salmon and other endangered species over the duration of the contract, instead only analyzing effects under near term climatic conditions in 2025 rather than effects over the full duration of the contracts (through 2045).	meterological variability into the future as well as several large ongoing projects that may require reinitation of consultation that could become operational in the 2030's.
45	47	The DEIS Fails to Adequately Analyze the Effects of Sacramento River Settlement Contractors' Diversions at Full Contract Amounts Unlike prior consultations and environmental reviews, the DEIS, and associated Biological Assessment, only model the effects of recent historic levels of water diversions by Sacramento River Settlement Contractors instead of full contract amounts. The modeling assumptions in the DEIS explicitly states that the CalSim modeling only analyzes historic diversions by the Sacramento River Settlement Contractors, not the full contract amounts. Appendix D to Biological Assessment at 46 ("Land-use based, full buildout of contract amounts, except for Settlement Contractors represented with historical diversions."); id. At 47 [Footnote 37: The text of the BA and DEIS inaccurately asserts that the document analyzes full contract deliveries to the Sacramento River Settlement Contractors. See DEIS at 3-2; see also January 2019 BA at 4-9 to 4-11. However, the CalSim modeling results and text demonstrate this statement is inaccurate.]. CalSim results from the DEIS also demonstrate that the Bureau of Reclamation changed the assumptions regarding the amount of water diversions by Sacramento River Settlement Contractors in both the No Action Alternative and the alternatives except alternative 4. In recent previous ESA Consultations and NEPA analyses Reclamation analyzed the effects of full contract amounts by the Sacramento River Settlement Contractors, including the California WaterFix biological opinions, California WaterFix Final EIS/EIR, and the 2015 Final EIS on Long Term Operations of the CVP and SWP [Footnote 38: The NMFS Biological Opinion for California WaterFix is available at https://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/CAWaterFix/WaterFix%20Biological%20Opinion/cwf_final_biop.pdf. The FWS	Please see response to comment 45-46.

Ltr#	Cmt#	Comment	Response
		Biological Opinion for WaterFix is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/swrcb_staff/usfws_bo.pdf. The Final EIR/EIS for California WaterFix is available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/exhi bit102/exhibit102_vol1.html. The 2015 Final EIS on the Long-Term Operations of the CVP and SWP is available at https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=21883. To the extent possible, a copy of each of these documents has been enclosed with this letter to be included in the record. See e.g., Exhibit CC [ATT27]. However, these documents are also in Reclamation's internal files and as such should be incorporated in the record since they are referenced and discussed in this letter.]. In contrast, here the Bureau of Reclamation has significantly reduced water diversions by Sacramento River Settlement Contractors in the model, limiting those diversions to historic levels rather than full contract amounts. Staff from the U.S. Fish and Wildlife Service confirmed that the CalSim model results show a significant reduction in water diversions by Sacramento River Settlement Contractors as compared to the California WaterFix modeling, providing the graphic below [Exhibit 4], and that this was a result of changes in the assumptions. See Email from Derek Hilts to Doug Obegi dated March 28, 2019 [Footnote 39: A copy of this email is enclosed with this letter to be included in the record. See Exhibit GG [ATT30].]. The Sacramento River Settlement Contractors have never diverted their full contact amounts, and in most years total diversions are only 75% or less of full contract amounts. As a result, this change in modeling assumption significantly altered the modeling results, including causing a significant increase in carryover storage in Shasta Reservoir as compared to those earlier modelling efforts. FWS staff confirm that the change in assumptions for Sacramento River Settlement Contractor water diversions played a role in the change in water storage in Shasta Dam and other reservoirs, as did the changes to the Coordinated Operations Agreement. Id. However, if the Sacramento River Settlement Contractors increased water diversions beyond historic levels up to full contract amounts, that would necessarily result in significant reductions in carryover storage in Shasta Dam and other reservoirs, reduced flows below the diversion points in the lower Sacramento River and Delta, and other adverse effects. These changes would significantly harm endangered winter-run Chinook salmon, spring-run Chinook salmon, Delta smelt, Green Sturgeon, and other species. For instance, NMFS	

Ltr#	Cmt#	Comment	Response
		has previously concluded that Shasta carryover storage levels as modeled in the WaterFix biological opinion and Final EIS/EIR would cause significant harm to winter-run Chinook salmon, jeopardizing the continued existence and recovery of the species and leading to the January 2017 draft revised Shasta RPA. However, the DEIS does not model or analyze any of the alternatives presented assuming full contract deliveries to the Sacramento River Settlement Contractors. Therefore, the DEIS does not accurately describe or analyze the potential environmental consequences of the proposed alternatives in violation of NEPA's requirements. This failure precludes the required hard look, and demands revision and recirculation of the DEIS.	
45	48	[Exhibit 4: Table showing Comparison of Baseline Modeling Results]	The commenter provided this exhibit in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
45	49	The DEIS Fails to Analyze the Effects of Water Diversions by Sacramento River Settlement Contractors over the Full Duration of the Contracts In addition to failing to consider the full amounts of water under the Sacramento River Settlement Contracts, the DEIS and associated January 2019 Biological Assessment also fails to consider the effects of water deliveries over the full duration of the contracts (through the year 2045). The DEIS only analyzes effects, including both the effects of climate change and Sacramento River Settlement Contractor water diversions, through the year 2025 [Footnote 40: Although the text of the DEIS modeling appendix elsewhere claims that the modeling incorporates the effects of climate change through the year 2030, the notes to the tables in the DEIS state that "All scenarios are simulated at ELT (Early Long-Term) Q5 with 2025 climate change and 15 cm sea level rise." See, e.g., DEIS at 5-5, Figure 5.2-1.]. As a result, the effects of 20 years of water diversions under the Sacramento River Settlement Contracts, in combination with the increased effects of climate change, are not analyzed in the DEIS. Numerous scientists and agencies including NMFS, USBR, and CDFW have acknowledged that climate change is likely to increase air and water temperatures, modify the amounts and forms of precipitation, and significantly change hydrology in the Bay-Delta watershed. These effects of climate change are widely accepted to increase over the longer term, with more significant effects anticipated after 2025, and these effects are likely to significantly exacerbate the effects of water project operations on endangered winter-run Chinook salmon, Delta Smelt, and other listed species in the Bay-Delta.	Please see response to comment 45-36.

Ltr#	Cmt#	Comment	Response
		Because the DEIS fails to analyze the effects of Sacramento River Settlement Contractor water diversions over the duration of these contracts, or how those effects could be compounded by climate change, the DEIS fails to provide an accurate scientific analysis or adequate disclosure of the environmental consequences of the alternatives.	
45	50	The DEIS fails to Accurately Model the Operations in the Proposed Action and Alternatives, and as a result the Modeling and Analysis of Environmental Impacts Fails to Accurately Assess Environmental Impacts The DEIS relies almost exclusively on modeling performed by Reclamation in its January 2019 Biological Assessment to analyze the impacts of the alternatives. However, the DEIS fails to accurately assess likely environmental impacts because this modeling is inaccurate. In particular, the DEIS fails to accurately model and assess environmental impacts resulting from: (a) Waivers of OMR pumping restrictions during storm events; (b) waivers of water quality standards and other protective measures that are likely to occur during droughts; and, (c) operation of the CVP with an enlarged Shasta Dam and Reservoir.	While the modeling of the COS and the NAA are the same, and Alternative 1 from the BA and Alternative 1 are the same, Reclamation completed modeling for Alternatives 2 through 4 for the Draft EIS. Reclamation has updated the modeling for Alternative 1 between the Draft EIS and this Final EIS to refine the depiction of Alternative 1, specifically to the assumptions related to OMR loss thresholds and to include a representation of the Delta Smelt Summer-Fall Habitat Action in the model. The Draft EIS modeling included a modeling assumption for waivers of OMR pumping restrictions during storm events. As stated in Attachment 2-1 in Appendix F of the Draft EIS, "WIIN Act Storm-Related OMR Flexibility: It is assumed that there may be storm-related OMR management flexibility in January and February. In wet years, it is assumed that storm events will coincide with turbidity bridge events and no OMR flexibility is modeled. In above normal and below normal years, it is assumed that there will be one opportunity in January and one opportunity in February to operate to a more negative OMR index than -5,000 cfs. This is modeled as 14-day OMR index of -6,000 cfs for 7 days in each month. In dry years, it is assumed that one opportunity occurs either in January or February but not both months." Secondly, waivers of water quality standards and other protective measures did occur in the 2014 - 2015 drought, but it is highly uncertain whether droughts during the implementation of this EIS would rise to the severity of the 2014-2015 drought and require similar waivers. Third, the Shasta Dam raise project is not in any of the alternatives in this EIS. It has its own EIS for construction and operation. The operation of Shasta Dam raise was included in the proposed action in Reclamation's Biological Assessment. As stated in the Biological Assessment: "Reclamation would operate a raised Shasta Dam consistent with the downstream requirements and operations described in this proposed action.". Therefore, the operation of the CVP under Alternative 1 would be the same as the operation of the CVP with Shasta Dam raise, unless additional environmental compliance is done to modify operations. Appendix D1 of the Final EIS has been modified to remove the operation of a Shasta Dam raise.

Ltr#	Cmt#	Comment	Response
45	51	Failure to Accurately Model Effects of OMR Waivers During Storm Events The DEIS fails to accurately model the effects of the OMR waivers during storm events included in the proposed action and alternatives. While the modeling presented in the DEIS assumes a single, short duration waiver in January and February to allow OMR flows of -6,000 cfs, the alternatives presented in the DEIS impose no limit on the magnitude, frequency or duration of these waivers. As a result, the OMR conditions modeled in the DEIS, are not reasonably certain to occur, and it is likely that OMR waivers would be more frequent, of greater magnitude, and for longer duration. It is inappropriate to rely on these more protective OMR model results in assessing the impacts of the proposal. See Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 524 F.3d 917, 935-36 & n.17. Second, the alternatives presented would significantly increase pumping and OMR reverse flows during April and May because it proposes to eliminate Action IV.2.1 in the 2009 NMFS biological opinion (San Joaquin River inflow: export action). The failure to accurately model likely effects of the OMR waivers under the alternatives in the DEIS results in an inadequate disclosure and discussion of the impacts to salmonids that are likely to occur from the project.	The EIS modeling includes Reclamation's assumption of 2 storm flex events in Wet, AN, and BN years, and one storm flex event in Dry years. It is uncertain to what extent OMR waivers will be applied in any given year. Historically, California has only received a small number of storms each year capable of triggering one of these waivers. In the 2 seasons of operation in accordance with the WIIN Act Section 2002, Reclamation and DWR have only used this storm flexibility once. Therefore the assumption of operation frequency included in the EIS is a more frequent use of storm flexibilities then observed to date. Given the likelihood of improving implementation processes increasing the frequency of storm flexibilities, Reclamation has determined this is a reasonable assumption. The draft EIS analyzes the effects of increased entrainment during the spring in Section 5.9.1.7 and Appendix O.
45	52	Failure to Model Impacts of Waivers of Water Quality Standards That Are Likely to Occur During Droughts During the recent drought, FWS approved waivers of water quality standards and other operational protections for Delta Smelt, which caused dramatically adverse effects on Delta Smelt. State and federal agencies have concluded similar waivers of Delta outflow and OMR requirements are reasonably foreseeable in future droughts. Moreover, the operations proposed in the DEIS are infeasible during critically dry years, which is likely to lead to operational changes in these years that may include waivers of water quality standards compliance that will worsen conditions for Delta Smelt, winter-run and spring-run Chinook salmon, and other ESA-listed species. However, the modeling and discussion in the DEIS fails to address or analyze the effects of these foreseeable changes in operations based on waivers of water quality standards and operational restrictions during future droughts. First, according to U.S. Fish and Wildlife Service staff, CalSim modeling of baseline [Footnote 41: We note that the No Action alternative would be unlawful, as it would violate the terms and conditions of Reclamation's water rights. See, e.g., SWRCB Water Rights Order 90-5 (requiring the Central Valley Project to operate Shasta Dam to meet downstream water temperature	Waivers of water quality standards and other protective measures did occur in the 2014 - 2015 drought, but it is highly uncertain whether droughts during the implementation of this EIS would rise to the severity level experienced during the 2014-2015 drought period and require similar waivers. As shown in Table 41-1 of Appendix F, both the No Action Alternative and Alternative 1 show Delta outflow of 3,000 cfs in September in approximately 40% of years and 10% of the years in October. Alternative 1 does reduce Delta Outflow in the summer as well as in wetter Septembers and Octobers but does not reduce Delta outflow to the 3,000 cfs level more often than the No Action Alternative. This is expected, because Alternative 1 includes the same D-1641 assumptions as the No Action Alternative. Because the D-1641 modeling assumptions were not changed between the No Action Alternative and Alternative 1, the modeling indicates that Alternative 1 would also meet D-1641 standards. Please see response to comment 45-36 regarding climate change.

Ltr#	Cmt#	Comment	Response
		requirements).] operations (Current Operations) in the Biological Assessment (which is reflect in the No Action Alternative in the DEIS) would drain Oroville Reservoir end of September storage far below minimum power pool levels in 8 of the 12 critically dry years that are modeled in CalSim. See email from Derek Hilts to Doug Obegi dated March 29, 2019. For instance, Oroville EOS storage is reduced below 800 TAF in 1924, 1929, 1931, 1933, 1934, 1977 (to 138.7TAF), 1988, and 1992. Id. These storage levels likely would cause significant adverse environmental impacts, and releases from the reservoir would be greatly limited or impossible because the storage would be below the powerhouse and the River Valve Outlet System has limited or no capability to release flows currently. Average critical year EOS storage in Oroville under the No Action baseline is 750TAF, see BA Appendix D at 116, yet the Proposed Action would reduce average critical year EOS storage in Oroville to 739TAF, see id. at 117. Oroville storage under baseline conditions is significantly lower under this environmental review, which appears to result from the execution of the Addendum to the Coordinated Operating Agreement in combination with climate change. See email from Derek Hilts to Doug Obegi dated March 29, 2019. Second, the proposed operations under Alternative 1 would reduce Delta outflows during the summer and fall months to 3,000 cfs. Yet the Public Policy Institute of California and others have noted that Delta outflows at those levels would not meet salinity standards in the Delta; for instance, the recent PPIC report [Footnote 42: Public Policy Institute of California, A New Approach to Accounting for Environmental Water, Appendix B at 29-30 (2017), available online at: https://www.ppic.org/wp-content/uploads/1117ggr_appendix.pdf. This report is hereby incorporated by reference. See Exhibit HH [ATT31].] found that outflows of approximately 3,700 cfs are needed to maintain D-1485 and D-1641 salinity standards at Tracy. The conclusion that operations proposed in the alternatives and modeled in the DEIS appear infeasible and are likely to result in changes in operations during critically dry years is consistent with Reclamation and DWR's finding in the final EIS/EIR for WaterFix that changes to Delta outflow and Old and Middle River flow requirements are "reasonably foreseeable" to recur in future droughts. Further, NMFS concluded that the effects of the drought were one of the reasons why reinitiation of consultation was required, and there is no question that winter-run Chinook salmon, spring-run Chinook salmon, and other species suffered devastating declines in abundance as a result of drought and water project operations. However, the DEIS fails to model or otherwise	

Ltr#	Cmt#	Comment	Response
		analyze the likely effects of future waivers of Delta outflow and OMR requirements in future droughts under any of the alternatives. The failure to model or otherwise disclose the effects of future waivers of water quality standards is insufficient to meet NEPA's data and information disclosure requirements and prevents Reclamation and the public from taking a hard look at the environmental consequences of the proposed action. The DEIS must be revised and recirculated to address these shortcomings.	
45	53	Failure to Model Impacts of Enlarging Shasta Dam Assuming that operation of an enlarged Shasta Dam is a component of the alternatives presented in the DEIS, the modeling in Reclamation's January 2019 Biological Assessment and relied upon in the DEIS to assess impacts of the alternatives is inadequate because it fails to model the effects of enlarging Shasta Dam [Footnote 43: As discussed above it is entirely unclear whether the alternatives in the DEIS do in fact include operation of an enlarged Shasta Dam. This uncertainty is itself a fatal flaw in the DEIS and requires revision and recirculation of the DEIS to comply with NEPA.]. Specifically, the text of the BA states that an 18.5-foot raise of Shasta Dam is included in the proposed action, with less than one third of the increased storage capacity purportedly for dedicated cold-water storage (191 TAF). BA at 4-33 [Footnote 44: Appendix D1 of the DEIS also notes that the 18.5-foot raise of Shasta Dam would result in an increased capacity purportedly dedicated to cold-water pool storage of 191 TAF. In explaining how an enlarged Shasta Dam would be operated, the DEIS refers to Alternative CP4A in the Final Shasta Lake Water Resources Investigation Feasibility Report, for CVP only. Appendix D1 of DEIS at D-17 (the Final Shasta Lake Water Resources Investigation Feasibility Report is available at https://www.usbr.gov/mp/ncao/slwri/docs/feasability/slwri-final-fr-full.pdf and enclosed with this letter to be included in the record). See Exhibit II [ATT32].] However, the CALSIM modeling in the BA does not include an expanded Shasta Dam and instead only models the existing storage capacity of Shasta Dam. BA Appendix D at 48. Other models used to support and analyze the environmental consequences of alternatives in the DEIS rely on the CALSIM modeling in the BA, and thus they also fail to consider the effects of an enlarged Shasta Dam. As a result, the modeling in the BA and incorporated in the DEIS fails to analyze or consider the effects of enlarging Shasta Dam throughout the DEIS.	Please see response to comment 45-5.
45	54	The consequences of Reclamation's failure to properly model the effects of enlarging Shasta Dam render the analyses of environmental consequences	Please see response to comment 45-5.

Ltr#	Cmt#	Comment	Response
		throughout the DEIS inadequate. For example, increasing water storage in Shasta Dam will reduce flows in the Sacramento River and into the Delta by a commensurate amount, but by failing to model the increased storage capacity Reclamation fails to analyze the timing, frequency, or magnitude of reduced flows below Shasta Dam. State and Federal agencies have raised significant concerns in the past that the reduction in flows below Shasta Dam caused by raising Shasta Dam would adversely affect listed salmonids. Reduced flows in the Sacramento River during the winter and spring months will reduce the survival of salmon in the Sacramento River and survival in the Delta in most years. Likewise, reduced inflows into the Delta resulting from increased storage and capture at an enlarged Shasta Dam will likely harm Delta Smelt and other species in most years by reducing Delta inflows and outflows. As a result of failing to properly account for an enlarged Shasta Dam in its modeling, the DEIS wholly fails to model and consider these adverse effects on ESA listed species.	
45	55	Because Reclamation fails to model and analyze the effects of an enlarged Shasta Dam, it fails to demonstrate to what extent, if any, the dam raise would change temperature management for salmonids below the dam. The DEIS does not include any rule that would reasonably ensure that increased water storage for fishery purposes resulting from an enlarged Shasta Dam would be available during drought conditions, or what that volume of water would be in addition to. Because there is no operational rule requiring this storage to be maintained into drought conditions, there is no basis to conclude that any additional cold-water pool storage would be reasonably certain to occur in drought years. As these examples demonstrate, Reclamation’s failure to properly model operations of an enlarged Shasta Dam results in a failure to provide an accurate analysis or ensure scientific integrity of its analysis throughout the DEIS. The DEIS therefore does not satisfy NEPA’s hard look requirements. The DEIS must be revised and recirculated to address this shortcoming.	Please see response to comment 45-5.
45	56	The DEIS Does Not Adequately Model or Analyze the Impacts of Proposed Operations in light of Likely Impacts of Climate Change Although the DEIS was prepared to analyze the impacts associated with the “Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project,” the document only analyzes the effects of operations through the year 2025, and it fails to consider the long-term effects of water project operations despite the fact that operations are anticipated to occur long after 2025. As a result, the DEIS does not adequately	Please see response to comment 45-36.

Ltr#	Cmt#	Comment	Response
		incorporate or analyze the effects of climate change on long-term operations of the CVP, and thus fails to adequately consider the impacts of the alternatives as required by NEPA.	
45	57	The importance of considering the effects of climate change on the project operations in a DEIS is especially critical when the project in question is vulnerable to impact from drought, like the CVP is [Footnote 45: See Memorandum to Heads of Federal Departments and Agencies from Christina Goldfuss, available at https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf and enclosed with this letter to be included in the record. See Exhibit JJ [ATT33].]. A through and robust evaluation of the effects of climate change on the project is important to ensure each alternative is assessed for its climate resiliency and to ensure future project operations and their impacts can be properly assessed and appropriately mitigated [Footnote 46: Inclusion of the likely effects of climate change is also required under the Endangered Species Act.]. There is no question that climate change will have dramatic impacts on the availability of and temperature of water within the CVP in the future. State and federal agencies have concluded that the adverse effects of climate change on ESA-listed species (e.g., increased air and water temperatures, more frequent droughts, changes in the timing and amounts of precipitation) are likely to worsen after 2025, exacerbating the adverse effects of operations of the CVP and SWP. As NMFS explained in its 2017 biological opinion on the California WaterFix project, climate change is likely to increase the frequency of droughts, as well as causing less total precipitation, a shift in precipitation from snow to rain, and earlier snow melt. See NMFS 2017 at 50. The 2017 Biological Opinion also warned that Another important overall consideration is that the water temperature modeling reflects projected climate change to 2030 and to the extent that climate change creates greater thermal stress beyond what is projected for 2030, any adverse effects seen in the modeling will accordingly be exacerbated. Based on previous climate change modeling for the Central Valley (Cayan et al. 2009), NMFS expects that climate conditions will follow a trajectory of higher temperatures beyond 2030. Not only are annual air temperatures expected to continue to increase throughout the 21st century, but the rate of increase is projected to increase with time. That is, in the early part of the 21st century, the amount of warming in the Sacramento region is projected to be less than it is in	Please see response to comment 45-36.

Ltr#	Cmt#	Comment	Response
		the latter part of the century under both low and high carbon emissions scenarios (Cayan et al. 2009). Id. at 323. In the WaterFix Final EIS/EIR, lethal water temperatures below Shasta Dam in the year 2060 are significantly increased in magnitude and frequency compared to conditions in 2025. Similarly, a recent study by the California Department of Water Resources and University of Massachusetts found that by the year 2050, the effects of increased temperatures as a result of climate change is likely to significantly reduce water storage in Oroville Reservoir (April and September) and reduce Delta outflow as compared to today [Footnote 47: A copy of this report is enclosed with this letter for inclusion in the record. See Exhibit KK [ATT34].]. In addition, the study notes that increased climatic variability, such as more frequent and/or extended duration of droughts, was not analyzed but could lead to additional adverse impacts beyond those identified in the study. The DEIS fails to adequately account for climate change in its analyses because it does not include sufficient modeling of project impacts under likely climate change scenarios. For watersheds other than the Sacramento River, the DEIS makes no attempt to model the impacts of climate change despite the fact that there is modeling available that identifies the anticipated effects of climate change on water resources in California over the next fifty years (to 2070). For the Sacramento River, the modeling performed only accounts for projected climate change impacts through 2025, despite the fact that the ESA consultation is expected to result in a Biological Opinion that last through 2030 and the DEIS analyzes operations to fulfill contracts that extend to 2045. As such, the DEIS falls far short of adequately accounting for and analyzing the impacts of the alternatives through either the length of the anticipated biological opinion or the foreseeable operation of the CVP to satisfy contracts through 2045.	
45	58	As a legal matter, both the DEIS and the associated Biological Opinion(s) must analyze effects for the same duration of time as any water supply contracts or permits that rely on these analyses, [Footnote 48: See, e.g., Conner v. Burford, 848 F.2d 1441, 1453, 1458 (9th Cir. 1988); Wild Fish Conservancy v. Salazar, 628 F.3d 513, 521-525 (9th Cir. 2010). As a final note, the fact that CVP and SWP operations will undergo reinitiation in the future does not justify the failure to analyze the longer-term effects of the projects in this consultation and associated DEIS. Wild Fish Conservancy, 628 F.3d at 525. Because the DEIS and associated consultation fail to analyze the long-term operations of the CVP	Please response to comment 45-36.

Ltr#	Cmt#	Comment	Response
		and SWP after the year 2025, the consultation fails to comply with the ESA.] and they must include the likely effects of climate change over that same time period. To satisfy NEPA, the DEIS must be revised and to include analyses and modeling that accounts for anticipated climate change in order to facilitate the required hard look at the impacts of the project.	
45	59	Not only is the modeling of climate change impacts insufficient to satisfy NEPA, the climate change modeling presented in the BA, and relied in the DEIS, is not based on the best available science [Footnote 49: See NMFS Biological Opinion on Long-term Operation of the CVP and SWP, Review Draft dated July 30, 2019. A copy of this document is enclosed with this letter for inclusion in the record. See Exhibit LL [ATT35].]. As a DEIS prepared to conjunction with a consultation under the ESA, it is incumbent on Reclamation to rely on the best available science as required by the ESA. At a minimum, Reclamation must rely on information that is "high quality," and ensure "accurate scientific analysis" and "scientific integrity." See 40 C.F.R. §§ 1500.1(b), 1502.24. Failing to rely on the best available science with respect to climate change does not ensure these requirements are met. To remedy this defect, the DEIS should be revised to include and rely upon climate change modeling that reflects the best available science.	Please see response to comment 45-36.
45	60	The DEIS Must Be Revised and Recirculated in order to Comply with NEPA As discussed above, the DEIS violates NEPA because it includes an inadequate purpose and need statement, fails to consider a reasonable range of alternatives, fails to adequately describe the proposed project, and fails to adequately assess the likely environmental impacts of the proposed project. As a result, Reclamation must revise the DEIS and recirculate a legally adequate document for public Comment before it can implement any of the alternatives considered in the DEIS.	Please see Master Response 1, Responses to General Comments, regarding the purpose and need. Please see Master Response 4, Alternatives Formulation, regarding the range of alternatives evaluated in the EIS.
45	61	[ATT1: Exhibit A—Letter from FWS to Reclamation dated August 2, 2016]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	62	[ATT2: Exhibit B: Letter from NMFS to Reclamation dated August 17, 3016]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	63	[ATT3: Exhibit C—January 19, 2017 Letter to Reclamation from NMFS Re: Proposed Amendment to the Reasonable and Prudent Alternative of the 2009 Opinion]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
45	64	[ATT4: Exhibit D—Memo from Sec. of Interior to President of U.S., dated August 30, 2016 Re: Update on California Water Issues]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	65	[ATT5: Exhibit E—Record of Decision January 2016 Coordinated Long-Term Operation of the Central Valley Project and State Water Project Prepared by: U.S. Department of the Interior Bureau of Reclamation Mid-Pacific Region Bay-Delta Office]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	66	[ATT6: Exhibit F—2017 Final Scientific Basis Report in Suppose of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows Prepared by: State Water Resources Control Board California Environmental Protection Agency]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	67	[ATT7: Exhibit G {Referenced to as Exhibit H in letter) --Letter from Reclamation to DFG dated February 13, 2008 Subject: Designation of Longfin Smelt as a Candidate Species Under the California Endangered Species Act]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	68	[ATT8: Exhibit H (Referred to as Exhibit F in Letter) July 2018 Framework from the Sacramento/Delta Update to the Bay-Delta Plan]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	69	[ATT9: Exhibit I—April 2019 "Proposed Action" Chapter of the Biological Assessment]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	70	[ATT10: Exhibit J—Table showing Summary of Modifications to Chapter 4 (Proposed Action) from the Biological Assessment from January 21, 2019 to July 30, 2019]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	71	[ATT11: Exhibit K—July 1, 2019	The attachment provided by the commenter is a version of the 2019 Draft Biological Opinion that was not transmitted to Reclamation. Please refer to

Ltr#	Cmt#	Comment	Response
		Biological Opinion for the Long-Term Operation of the CVP and SWP Endangered Species Act Section 7(a)(2) Biological Opinion Reinitiation of Consultation on the Long-Term Operation of the Central Valley Project and the State Water Project NMFS Consultation Number: WCR-2019-11484]	Master Response 2, Related Regulatory Processes, regarding the relationship between Endangered Species Act Section 7 consultation and the NEPA process. This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	72	[ATT12: Exhibit L—2014 Updated conceptual model of Delta Smelt biology: our evolving understanding of an estuarine fish]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	73	[ATT13: Exhibit M—July 23, 2017—USFWS Biological Opinion for the California WaterFix]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	74	[ATT14: Exhibit N—Alife cycle model and population viability analysis for the wild delta smelt Leo Polansk Ken Newman Lara Mitchell Will Smith]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	75	[ATT15: Exhibit O—DOI Secretarial Order NO.3343 Subject: Actions to Address Effects of Drought and Climate Change on California's Water Supply and Listed Species]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	76	[ATT16: Exhibit P Independent Review of the Coordinated Long-Term Operation of the Central Valley Project and State Water Project Prepared for: National Marine Fisheries Service U.S Fish and Wildlife Service By: Joseph E. Merz Ph.D. Cramer Fish Species]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	77	[ATT17: Exhibit Q Independent Review of the Coordinated Long-Term Operation of the Central Valley Project and State Water Project	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
		Prepared for: National Marine Fisheries Service U.S Fish and Wildlife Service By: Ronald T. Kneib, Ph.D.]	
45	78	[ATT18: Exhibit R—Biological Assessment for WaterFix, January 2016]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	79	[ATT19: Exhibit S—Individual-Based Modeling of Delta Smelt Population Dynamics in the Upper San Francisco Estuary III. Effects of Entrainment Mortality and Changes in Prey By Wim J. Kimmerer and Kenneth Rose, 2017]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	80	[ATT20: Exhibit T—December 2018 Environmental Assessment Addendum to the Coordinated Operation Agreement Central Valley Project/State Water Project 18-35-MP]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	81	[ATT21: Exhibit U—Letter from NMFS to Reclamation dated February 19, 2019. Re: Transmittal of February Resoir Operations Forecast Per RPA Action I.2.3]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	82	[ATT36: Exhibit V—Letter from NMFS to Reclamation dated July 15, 2015 Re: Contingency Plan for Water Year 2015 Pursuant to Reasonable and Prudent Alternative Action I.2.3.C of the 2009 Coordinated Long-term Operation of the Central Valey Project and State Water Project Biological Opinion, Including a Revised Sacramento River Water Temperature Management Plan]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	83	[ATT22: Exhibit W—Recovery Plan NMFS 2014 For the Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon Central Valley Spring-Run Chinook Salmon and The Distinct Population Segment of California Central Valley Steelhead]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
45	84	[ATT23: Exhibit X Decoupling outmigration from marine survival indicates outsized influence of streamflow on cohort success for California's Chinook salmon populations Cyril J. Michel, 2018]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	85	[ATT24: Exhibit Y—by Cordoleani et al., 2017 Movement and Survival of Wild Chinook Salmon Smolts from Butte Creek During their Out-Migration to the Ocean: Comparison of a Dry Year Versus a Wet Year]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	86	[ATT25: Exhibit AA--Response of juvenile Chinook salmon to managed flow: lessons learned from a population at the southern extent of their range in North America Zeug et al., 2014]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	87	[ATT26: Exhibit BB—2016 Six-Year Acoustic Telemetry Steelhead Study: Statistical Methods and Results By Rebecca Buchanan Columbia Basin Research, 2018]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	88	[ATT27: Exhibit CC—NMFS June 16, 2017 Re: Endangered Species Act Section 7(a)(2) Biological Opinion, Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response, and Fish and Wildlife Coordination Act Recommendations for the California WaterFix Project in Central Valley, California]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	89	[ATT28: Exhibit DD—Estimating spatial-temproal differences in Chinook salmon outmigration survival with habitat and predation related covariates Mark J. Henderson et al.]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	90	[ATT29: Exhibit EE—Same as Exhibit M—June 23, 2017 USFWS Biological Opinion for the California WaterFix]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	91	[9ATT30: Exhibit GG—March 29, 2019, Email from Derek Hilts at USFWS to Doug Obegi Re: [EXTENRAL] CALSIM modeling questions]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	92	[ATT31: Exhibit HH—Public Policy Institute of California A New Approach to Accounting for Environmental Water	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
		Insights from the Sacramento-San Joaquin Delta Technical Appendices Contents: Appendix A: A brief Review of Regulatory Assignment of Water in the Sacramento—San Joaquin Delta Greg Gartrell and Brian Gray Appendix B: Water Assigned to Meeting Environmental Standards in the Delta from 1980-2016 Greg Gartrell, Jeffrey Month, Ellen Hanak, Alvar Escriva-Bou, Brian Gray]	
45	93	[ATT32—Exhibit II—Department of the Interior Final Shasta Lake Water Resources Investigation Feasibility Report July 2015]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	94	[ATT33: Exhibit JJ—August 1, 2016 Memorandum for Heads of Federal Departments and Agencies From: Christina Goldfuss, Council of Environmental Quality Subject: Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and Effects of Climate Change in National Environmental Policy Act Reviews]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	95	[ATT34—Exhibit KK, May 2019 Decision Scaling Evaluation of Climate Risks to the State Water Project Final Report A Collaborative Study of the Hydrosystems Research Group, University of Massachusetts, Amherst and the California Department of Water Resources]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	96	[ATT35: Exhibit LL—NMFS PreDecisional Review Draft July 30, 2019 Biological Opinion on Long-Term Operation of the CVP and SWP WCRO-2016-00021]	This attachment was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.
45	97	[Exhibit 2: Table showing mortality by Water Year—Shasta RPA target and 2019 BA COS]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.

Ltr#	Cmt#	Comment	Response
46	1	When Donald Trump was campaigning he said that water hitting the ocean from California's rivers was waisted and should go to large Central Valley agribusiness. He promised to do something about it. The water he promised is same water that feeds the San Fransisco Bay and Sacramento and Klamath Rivers. It is the same water that is barely keeping California's salmon and fishing industry holding on, and that currently feeds the state's drinking water supply. He is now turning his promise into a reality with a plan that delivers 22% more water to large Central Valley agribusiness and power companies. Trump dos not care about the Tribes, commercial fishermen, or coastal communities that rely on clean water and salmon. He has even gone as far as to suppress a scientific review of the project. A leaked copy of the review shows that the plan threatens the continued existence of winter and spring run salmon, summer steelhead trout, and Souther Resident killer whales whales.	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please see Master Response 1, Responses to General Comments, for responses to general comments on the EIS.
46	2	The Trump Water Plan impacts the Sacramento, Feather, American, McCloud, Pit Trinity, Klamath, San Joaquin and Yuba Rivers because all of these rivers feed the Central Valley Federal and state water projects. The man in charge of this plan is Secretary of Interior David Bernhardt. He is a former lawyer/lobbyist for the oil and corporate agriculture industries and worked for the powerful Westlands Water District, which regularly litigates and lobbies against salmon and water protections. An investigation revealed that Bernhardt has lobbied for Westlands since taking a job regulating them. The Trump Water Plan or the Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project" is a blueprint for California Salmon Extinction and will impact millions of people's drinking water and the remaining salmon in the state, and the Tribes, fishermen, and coastal communities that rely on salmon fishing. Please tell the Trump administration and state of California to reject the Trump water plan.	Please see response to comment 46-1.
46	3	Fish need water, adequate water, to thrive. They're integral to our river systems and the well being of tribes. Big Ag other industrial users, while also important, need to find other methods of supporting their businesses. Fish and River systems don't function without adequate water.	Please see response to comment 46-1.
46	4	Water belong to where it flows. Don't divert our water.	Please see response to comment 46-1.

Ltr#	Cmt#	Comment	Response
46	5	We need more water in our Trinity and Klamath Rivers for a healthy fish environment. We depend on the fish for food and our basic survival!!!	Please see response to comment 46-1.
46	6	I am a Native American and I believe in saving the salmon and our rivers.	Please see response to comment 46-1.
46	7	I follow the Winnemem Wintu tribe—they are the salmon people with thousands of years of history with salmon, and we are killing off so much of our food sources just as the world is starting to experience food scarcity—due to accelerated global warming.	Please see response to comment 46-1.
46	8	Diversions are harmful to the environment and sustainability of a healthy watershed, including our fisheries and drinking water.	The commenter is making a general opinion about diversions. The commenter does not make a general comment on the EIS. No further response is required.
46	9	This plan serves a few to the detriment of the many.	Please see response to comment 46-1.
46	10	I love the Sacramento Delta and do not wish to see it become one big algae bloom	Please see response to comment 46-1.
46	11	Our rivers are our life line, if we lose any more water to the Central Valley Agribusiness and power companies we will lose Salmon, drinking water and our basic needs will not be met.	The commenter is making a general opinion about agricultural water use. The commenter does not make a general comment on the EIS. No further response is required.
46	12	The cruelty to the animals and indifference to their suffering is in my view one of the gravest sins of the human race. This is the basest of human depravity.	Please see response to comment 46-1.
46	13	Imperative that this be done. Our lives are intertwined with theirs, in terms of both food and spirit.	Please see response to comment 46-1.
46	14	It’s the right thing to do. The salmon have been partners with the native peoples for eons. We must save the waters and their inhabitants for the future generations.	Please see response to comment 46-1.
46	15	We must act now to save the salmon, undam the rivers and take care of Mother Earth!	Please see response to comment 46-1.
46	16	This is sick this is beyond belief this should be stopped now	Please see response to comment 46-1.
46	17	big money does not need more money - the water should be for our subsistence, not to make a corporation richer	Please see response to comment 46-1.
46	18	Evil always returns to the one who does it. Don’t forget it! Some “humans” don’t have the word “respect” in their vocabulary! It is our responsibility to respect and protect wildlife and nature! They too have a right to have a healthy life on this planet. There is only one nature. You understand? You are human, be humane. Take finally your responsibility and react, please. Stop this suffering on this massacre of animals and nature! Civilized? Honestly?! It’s truly sad to need to sign these petitions. Thank you.	Please see response to comment 46-1.

Ltr#	Cmt#	Comment	Response
46	19	I care about our ways of life, salmon & the rivers health are very important. do NOT take our water from Northern CA rivers... Dont mess with mother nature!	Please see response to comment 46-1.
46	20	Salmon are a Sacred gift to be protected from greedy humans.	Please see response to comment 46-1.
46	21	I am signing because we are irrigating a desert at extreme cost to rivers and largest estuary s. J. Delta. Taking more water from the Delta or the Sacramento River is killing the rivers the delta and all life in it. We do not need more pumps or more and higher dams what we need is agriculture that is natural to an arid climate and we need more water conservation less private pools, green lawns but natural vegetation and water taken out of industry hands and put into public hands since it is for us all and not special interests and water companies that make a fortune selling it.	Please see response to comment 46-1.
46	22	Save the Salmon! We need the water for the Salmon, Steelhead and whales. Don't kill our state and our ocean! Oceans and fish need water from rivers. Save the estuary don't turn it into an open sewer!	Please see response to comment 46-1.
46	23	Corporate water theft endorsed by greedy politicians. Fish need Water!	Please see response to comment 46-1.

Ltr#	Cmt#	Comment	Response
47	1	Preferred Alternative The stated purpose of the proposed project is to continue the operation of the CVP in a coordinated manner with the SWP, for its authorized purposes, in a manner that enables Reclamation and the California Department of Water Resources (DWR) to maximize water deliveries and optimize marketable power generation consistent with applicable laws, contractual obligations, and agreements; and to augment operational flexibility by addressing the status of listed species. As described above, the Preferred Alternative increases water deliveries, exports, increases reverse flows, and decreases Delta outflows. Available scientific knowledge indicates that decreasing freshwater flows in the Bay-Delta watershed and increasing exports and associated reverse flows in the interior Delta is expected to have a negative impact on the survival and abundance of native fish species, including threatened and endangered species that are the subject the existing BiOps for the Projects. There is a body of scientific evidence that increased freshwater flows through the Delta and aquatic habitat restoration are needed to protect Bay-Delta ecosystem processes and native and migratory fish.[Footnote 1: National Academy of Sciences Natural Resource Council Committee on Sustainable Water Management in California's Bay-Delta (2012) Report: Sustainable Water and Environmental	Thank you for taking the time to participate in the Coordinated Long-term Operation of the CVP and SWP Draft EIS public review process. Please refer to Master Response 7, Aquatic Resources, for response to general comments regarding project impacts on sensitive aquatic species. The commenter's assertion that, "Available scientific knowledge indicates that decreasing freshwater flows in the Bay-Delta watershed and increasing exports and associated reverse flows in the interior Delta is expected to have a negative impact on the survival and abundance of native fish species…" is acknowledged and was addressed in the EIS. Section 1.4, Areas of Controversy, of the EIS discusses hydrodynamic effects on juvenile salmonids and discusses the importance of Delta outflow and related variables in driving population dynamics of Delta smelt and longfin smelt. Section 4.8, Bay-Delta Operations, describes the regulatory setting and fisheries resources of the Bay-Delta, including discussions of relationships between river flows, Delta outflow, and fisheries resources. Fishery resources of the Bay-Delta and relationships to flows are also described by species in Appendix O, Section O.2.10.1, Fish in the Delta.

Ltr#	Cmt#	Comment	Response
		Management in California's Bay-Delta " ... sufficient reductions in outflow due to diversions would tend to reduce the ab1Jndance of these organisms ["these organisms"= 8 Bay Delta aquatic species at various trophic levels]." Page 60 and "Thus, it appears that if the goal is to sustain an ecosystem that resembles the one that appeared to be functional up to the 1986-93 drought, exports of all types will necessarily need to be limited in dry years, to some fraction of unimpaired flows that remains to be determined." Page 105; California Department of Fish and Wildlife (2010) Quantifiable Biological Objectives and Flow Criteria " ... current Delta water flows for environmental resources are not adequate to maintain, recover, or restore the functions and processes that support native Delta fish." Page 1 in Executive Summary; Public Policy Institute of California (2013) Scientist and Stakeholder Views on the Delta Ecosystem "a strong majority of scientists prioritizes habitat and flow management actions that would restore more natural processes within and upstream of the delta" (p. 2). http://www.ppic.org/content/pubs/report/R_ 413EHR.pdf; State Water Board (2010) Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem Flows Report, p.7. "Both flow improvements and habitat restoration are essential to protecting public trust resources [defined as "native and valued resident ahd migratory species habitats and ecosystem processes" p. 10]; State Water Board (2016) Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives. https://www.waterboardsca.gov/waterrights/water issues/programs/bay delta/bay d Ila plan/water quality control planning/2018 sed/docs/appx c.pdf.; State Water Board (2017) Scientific Basis Report in Support of New and. Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows. https://www.waterboards.ca.gov/water _issues/ programs/ peer_review/ docs/scientific_ basis_phase_ii/201710_bdphaseII_sciencereport.pdf] Accordingly, it is not clear how the proposed project will not further degrade conditions for fish and wildlife species that are already in poor condition, some of which are on the verge of functional extinction or extirpation.	Changes to Bay-Delta inflow and impacts to aquatic resources (in particular, to juvenile salmonids and smelts) are summarized in Chapter 1, Section 1.3.2, Analysis Overview: “In the Bay-Delta, changes to water project operation have the potential to increase the risk of entrainment, but would increase flow in the Sacramento River mainstem, which would increase survival and reduce routing into the interior Delta where survival is often lower regardless of flows.” The Section 1.3.2 discussion also summarizes how changes to water operations, summer-fall habitat operations, and captive breeding of Delta smelt, may benefit aquatic species, though water operation changes may negatively affect longfin smelt abundance and increase south Delta entrainment risk. As summarized in Section 1.3.2, program-level actions implemented under the preferred alternative, including habitat restoration, diversion screening, and predator removal, would potentially benefit salmonids and other sensitive aquatic species. See the EIS at Section 5.9, Aquatic Resources, for description of project-level and program-level effects and benefits to aquatic resources, including in the Bay-Delta. For additional detail on potential effects of implementation of Alternative 1 on Bay-Delta aquatic resources, see Appendix O, Section O.3.3.8, Bay-Delta, for project-level effects, and Section O.3.4.3, Bay-Delta, for program-level effects.
47	2	It is not clear how the proposed project will meet requirements to provide for the reasonable protection of fish and wildlife pursuant to the Porter Cologne Act. In 2009, the State Water Board initiated a public process to update flow objectives in the Bay-Delta Plan for the reasonable protection of fish and wildlife beneficial uses. The scientific basis for updating flow objectives supports increasing spring, winter, and fall flows in tributaries to the Bay-Delta,	Please see Master Response 1, Responses to General Comments, for a discussion of compliance with applicable laws.

Ltr#	Cmt#	Comment	Response
		increasing Delta outflows, and reducing cross Delta flows, in addition to numerous non-flow measures to provide reasonable protection for fish and wildlife beneficial uses. The science specifically supports not reducing existing (baseline) spring, winter, and fall flows as is proposed in the Preferred Alternative.	
47	3	Alternative 4 In previous comments on Reclamation's Notice of Intent to prepare the DEIS, the State Water Board recommended that the DEIS evaluate alternatives consistent with the Board's ongoing efforts to update the Bay-Delta Plan. In particular, on December 12, 2018, the State Water Board adopted Lower San Joaquin (LSJR) flow updates to the Bay-Delta Plan, including updated flows on the Stanislaus River. In July of 2018, the State Water Board also released a Framework for potential updates to other components of the Bay-Delta Plan in the Sacramento River and Delta (Sacramento/Delta) (Framework) including: year round inflows of 55% of unimpaired flow from the Sacramento River, its tributaries, and the Delta and its tributaries; inflow based Delta outflows that protect the proposed· inflows as outflows and fall Delta outflows; cold water habitat measures; and interior Delta flow requirements consistent with existing BiOp requirements (Sacramento/Delta updates to the Bay-Delta Plan). Alternative 4, which was included based in part on comments from the State Water Board, includes evaluation of a 55% of unimpaired flow level from Project tributaries with offramps to preserve cold water pool. Alternative 4 and other alternatives do not include the recently adopted LSJR flows included in the 2018 Bay-Delta Plan, fall Delta outflows, or export constraints based on San Joaquin River flows included in the Framework (and current BiOps). Reclamation should include these constraints as part of Alternative 4. The alternatives discussion should also specifically identify the carryover storage offramps that were used for Alternative 4. To provide for consistency between State Water Board analyses and the EIS staff would like to discuss these assumptions with Reclamation, as well as the assumptions for the Sacramento River flow compliance locations and other issues.	SWRCB's adoption of the Lower San Joaquin River flow updates for the Bay Delta Plan is acknowledged. Alternative 4 is evaluated in the Draft EIS to improve flows for fish and wildlife beneficial uses while preserving reservoir cold water pool for release in successive years. Alternative 4 did not include all of the recent San Joaquin River flow updates. As described in Appendix F, Attachment 2-1, SWRCB's Decision 1641 was used because those requirements were in place at the time of Reclamation's Notice of Intent for its EIS. Consideration was also given to the current uncertainty about implementation of the San Joaquin River updates. As described in the Board's Initial Lower San Joaquin River Flow Compliance Measures document, the Board has not yet assigned responsibility for implementing the LSJR flow objectives and compliance methods are starting points identifying compliance methods. They are not yet fully in effect. Additionally, considerable uncertainty about implementation of potential voluntary settlement agreements currently exists that creates uncertainty about potential assumptions for CALSIM II modeling analyses. Given the timing of the flow updates and the uncertainties about implementing adopted or future flow objectives, the current CALSIM II approach, as described in Appendix F was used for EIS analyses.
47	4	The Preferred Alternative proposes changes to operations that would require changes to Reclamation's existing water right requirements or the implementation of those requirements contained in State Water Board Decision 1641 (D-1641), Decision 1422 (D-1422), and Order 90-5 that include measures to implement water quality control plan requirements. In order for such changes	Please refer to Master Response 1, Responses to General Comments, for a discussion of compliance with the Water Rights Order 90-5. Existing water

Ltr#	Cmt#	Comment	Response
		to be approved, Reclamation must meet Water Code requirements, including supporting findings that there will be no unreasonable impacts to fish and wildlife from the changes and that the changes do not create an inconsistency with water quality control plan requirements for the reasonable protection of fish and wildlife (which is a different standard than jeopardy under the Endangered Species Act).	right requirements such as D-1641 and Order 90-5 are incorporated into the operations described in Alternatives 1 through 3.
47	5	The DEIS does not address Reclamation's existing D-1641 San Joaquin River base flow and pulse flow requirements and does not explain how the proposed project would affect compliance with either of these requirements or whether Reclamation is proposing to change these requirements, which appears to be the case. In addition, none of the alternatives includes an analysis of the updated LSJR flow requirements included in the Bay-Delta Plan. Similarly, the DEIS description of alternatives does not address interior southern Delta salinity objectives in D-1641 or the recently modified southern Delta salinity objectives in the 2018.Bay-Delta Plan. These issues should be addressed in the assessment of alternatives.	As stated in the EIS, Reclamation and DWR propose to operate in accordance with obligations under D-1641. Reclamation will continue to operate in accordance with applicable state and Federal laws. Please see response to comment 47-3 regarding alternatives consistent with the SWRCB's Bay-Delta Plan.
47	6	The Preferred Alternative proposes to move the existing dissolved oxygen compliance point from Ripon to Orange Blossom Bridge on the Stanislaus River (Section 3.4.6.1). This change would require approval from the State Water Board as discussed above and information to support that the change would provide for reasonable protection of fish and wildlife.	Reclamation agrees that this requires a SWRCB action.
47	7	The Preferred Alternative proposes to end temperature management actions below Keswick Reservoir the earlier of October 31 or when a work group determines that 95% of winter-run Chinook eggs have hatched and alevin have emerged (Section 3.4.1.3.1). In pertinent part, Order 90-5 requires Reclamation "to operate Keswick Dam, Shasta Dam, and the Spring Creek Power Plant to meet a daily average water temperature of 56°F in the Sacramento River ... during periods when higher temperatures will be detrimental to the fishery." Although Order 90-5 contains provisions for establishing a temperature compliance point upstream of Red Bluff Diversion Dam due to factors beyond Reclamation's reasonable control, it does not identify that temperature management may end based on a fixed date or the emergence of a fixed fraction of winter-run Chinook eggs and alevin. Nor does Order 90-5 only identify the protection of winter-run. The proposed changes to Sacramento River temperature management measures would require approval by the State Water Board and information to support that the changes would provide reasonable protection of fish and wildlife.	Please refer to Master Response 1, Responses to General Comments, for a discussion of compliance with the Water Rights Order 90-5. Existing water right requirements such as D-1641 and Order 90-5 are incorporated into the operations described in Alternatives 1 through 3. Please refer to Section 3.4.1.4 for the Alternative 1 discussion. Reclamation will comply with the requirements of these orders.

Ltr#	Cmt#	Comment	Response
47	8	The Preferred Alternative proposes to reduce Keswick flows during the fall-winter period and spring when accretions generally provide for downstream demands. Similar measures are also proposed for the American and Stanislaus Rivers. To the extent that reduced releases reduce baseline flows below existing conditions in other than very wet conditions, this action may further degrade conditions for listed and other sensitive native species that have well established relationships with river flows and Delta outflows as described in the State Water Board's Scientific Basis Report for potential Sacramento/Delta updates to the Bay-Delta Plan information to support Lower San Joaquin River flow updates to the Bay-Delta Plan. Accordingly, the DEIS should evaluate whether such actions provide for the reasonable protection of fish and wildlife under State law.	Please refer to Master Response 1, Response to General Comments, regarding the relationship between the Project and other ongoing plans, programs, or policies, including the Bay-Delta Plan Amendments, and regarding State regulatory processes and requirements. See Master Response 7, Aquatic Resources, regarding Delta outflow and reductions in flow under seasonal operations. Refer to Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of analysis and of mitigation developed.
47	9	The proposed project identifies that pulse flows could be provided in the spring (March through May) if, under the 90% hydrologic forecast in the prior month there is projected to be 4 million acre-feet of water in storage in Shasta Reservoir at the end of May. These constraints would limit how frequently spring pulse flows could be provided. Reclamation should evaluate different water supply assumptions during the late spring and summer that would allow for additional spring flows while still protecting cold water resources.	Refer to Master Response 7, Aquatic Resources, regarding Sacramento River Seasonal Operations, Spring Pulse Flows, and Coldwater Pool Management, including discussion of the balancing of the use of storage in spring versus maintenance of coldwater pool for avoidance of impacts on incubation in summer and fall. Please refer to Appendix O, Section O.3.3.2, Sacramento River, for discussion of potential changes to aquatic resources in the Sacramento River from spring pulse flows. Refer to Master Response 6, Hydrologic Modeling and Surface Water Resources, regarding evaluation of water supply. See Appendix F, Modeling, regarding assumptions included in modeling conducted for the EIS, specifically for CalSim II.
47	10	The proposed project specifies that a temperature compliance location would be determined based on storage in Shasta. Reservoir assuming fixed water supply deliveries and power generations. In order to attain a more favorable temperature regime for fish and wildlife, changes in water supply and/or power production assumptions should also be evaluated pursuant to Order 90-5 which requires Reclamation to take actions under its control to control temperatures.	Please refer to response to comment 47-7 and Master Response 1 for discussion of compliance with Water Right Order 90-5.
47	11	The DEIS (page 3-19) states that Shasta Reservoir operations would be determined based on monthly (or more frequent) reservoir temperature profiles. During drier/warmer conditions coldwater pool storage needs to be monitored closely and more often than monthly. An independent science panel's review of the current NMFS BiOp recommended the use of a real-time vertical array of thermistors for this purpose. This or another approach to provide for more real-time monitoring should be included in the proposed project.	Please refer to response to comment 47-7 and master response 1 regarding WRO 90-5. The proposed approach as stated in Section 3.4.1.4 includes: "Reclamation would determine based on monthly (or more frequently) reservoir temperature profiles. The Sacramento River above Clear Creek gage is a surrogate for the downstream extent of most Winter-Run Chinook Salmon redds. Temperature management would start after May 15 or when the Sacramento River Temperature Task Group (SRTTG) determines, based on

Ltr#	Cmt#	Comment	Response
			real-time information, that Winter-Run Chinook Salmon have spawned, whichever is later.”
47	12	The Preferred Alternative indicates that at times winter-run Chinook salmon redd dewatering would be allowed to occur in order to preserve storage in Shasta Reservoir for future years. Life history diversity is an important aspect of species viability that should not be limited based on unknown future conditions, particularly given the limited population of winter-run.	Section 3.4.4.1 describing seasonal operations for Alternative 1 indicates Reclamation will implement red dewatering protective adjustments to limit potential redd dewatering due to reductions in the minimum release during the January through May period.
47	13	The Preferred Alternative identifies rice decomposition smoothing as a method to improve conditions for fish species. Please provide specific information about this action related to the life history timing of fish that are intended to be protected.	The EIS has been updated at Section 3.4.1.5, Additional Operations Components, to describe the rice decomposition action in more detail. As described in Appendix O, Section O.3.3.2, Sacramento River, rice decomposition smoothing would result in, “…lower Sacramento River flow in late October and early November. With the lower flows, Fall-Run Chinook Salmon would be less likely to spawn in shallow areas that would be subject to dewatering during winter base flows. However, Winter-Run and Spring-Run Chinook Salmon spawn before the proposed river flow lowering would take place, making their redds susceptible to dewatering. Therefore, the potential benefits of this action, reduced dewatering of fall-run redds and greater Shasta storage refill, must be balanced against the potential impacts, dewatering of Spring-Run redds, which spawn during August through October, and dewatering of Winter-Run redds, which spawn from May through August. Under the No Action Alternative, there is no rice decomposition smoothing; therefore, Alternative 1 would increase the risk of dewatering of Spring-Run and Winter-Run redds, while reducing the risk of dewatering fall-run redds and the risk of conserving too little storage for protection of Winter-Run eggs in the following summer.” As described in Section 5.9.1.2, Sacramento River, rice decomposition smoothing, along with other actions under Alternative 1, would further facilitate increased coldwater storage, resulting in greater protection of the Spring-Run Chinook Salmon population. Increased coldwater pool storage would be used to optimize survival of the next year’s eggs and alevins, and reduced water temperatures resulting from release of coldwater storage would also benefit rearing juveniles.
47	14	The Preferred Alternative identifies that in the event of two successive years with total egg-to-fry survival less than 15% in each year, Reclamation would convene a meeting of the Regional Directors of DWR, NMFS, USFWS, and the California Department of Fish and Wildlife (CDFW) to identify and implement actions to address the potential for a third year of low survival. The	Please see Master Response 1, Responses to General Comments, for a discussion of compliance with the Water Rights order 90-5. Reclamation is unaware of any requirement of WRO 90-5 for SWRCB participation in a Directors’ meeting; however, the SWRCB may participate upon request. No changes to the EIS are needed.

Ltr#	Cmt#	Comment	Response
		State Water Board should also be included pursuant to the requirements of Order 90-5.	
47	15	American River Similar to the Sacramento River, the Preferred Alternative identifies that releases from the American River would be limited in the winter and spring, but would be elevated in the summer in part to support exports. Winter and spring flows are important for fall run Chinook salmon and steelhead on the American River, as well as in contributing to Delta outflows for numerous native species as explained in the State Water Board's Scientific Basis Report for Sacramento/Delta updates to the Bay-Delta Plan. As such, this proposed operational approach may not provide for the reasonable protection of fish and wildlife.	Winter and spring flows would remain at reasonable levels to support rearing and outmigration of salmonids. The Water Board also suggested that maintaining flow releases into early summer would be beneficial and protective of oversummering fishes. The balance of the preferred alternative seeks to maintain overall system health. The contribution to the Delta is influenced by a number of tributaries as part of the Sacramento-San Joaquin complex. The Preferred Alternative would not result in a notable impact to the Bay-Delta, and remains protective of resources within the American River. Please refer to the EIS Section 5.9, Aquatic Resources, for further discussion of potential effects to aquatic resources from implementation of the preferred alternative (specifically see Section 5.9.1.4, American River, and Section 5.9.1.7, Bay-Delta). Also refer to Appendix O, Section O.3.3.5, American River, and Section O.3.3.8, Bay-Delta, for more detailed analyses. See Master Response 7, Aquatic Resources, regarding Delta Outflow, and to Master Response 1, Responses to General Comments, regarding the EIS's relationship to other ongoing plans, programs or policies, including the SWB Bay Delta Plan Amendments.
47	16	Delta Cross Channel Gates Under the Preferred Alternative, Reclamation proposes to open the Delta CrossChannel Gates more frequently than under current conditions which could result in increased entrainment of adult and juvenile salmon into the interior Delta and a failure to provide for the reasonable protection of fish and wildlife beneficial use as discussed in the State Water Board's Scientific Basis Report for the Sacramento/Delta.	Refer to Chapter 3, Section 3.4.5.1, Delta Cross Channel, for description of Delta Cross Channel operations under Alternative 1, in which Reclamation would operate the DCC gates to reduce juvenile salmonid entrainment risk beyond actions described in D-1641, consistent with Delta water quality requirements in D-1641. Refer to Appendix O, Section O.3.3.8, Bay-Delta, for analysis of potential changes to aquatic resources due to Delta Cross Channel operations. In summary, operation of the Delta Cross Channel gates under Alternative 1 would minimize and/or reduce entrainment of juvenile salmonids by closing the gates for fishery protection purposes, as described in Chapter 3. Please also refer to Master Response 1, Responses to General Comments, regarding relationship to other ongoing plans, programs or policies, including the State Water Board's Bay Delta Plan Amendments.
47	17	Transfer Window The proposed project states that Alternative 1 would have a longer time period that transfers could move through the Delta pumping facilities, which could increase exports to some extent but that these increases in exports were not	Potential changes to fishes of the Bay-Delta resulting from expanded transfer window under Alternative 1 are described in Appendix O, Section O.3.3.8, Bay-Delta .

Ltr#	Cmt#	Comment	Response
		modeled. The aquatic resources section does not include a discussion of the effects of expanding the transfer window but should, particularly since many transfers are exempt from environmental review. Specifically, impacts to adult and juvenile fall-run Chinook salmon and adult stealhead entrainment and migration should be evaluated. It also seems that if the transfer window is expanded that overall transfers would likely increase. The potential impacts of increasing transfers should be evaluated.	
47	18	Joint Points of Diversion (JPOD) The proposed project makes reference to supporting transfers with joint points of diversion operations pursuant to D-1641 provisions. Please note that in order to operate under stage 2 JPOD (as well as Stage 3), exports for reasons other than to recover export reductions taken to benefit fish, a fisheries protection plan that ensures that the transfers do not harm fish is required.	Reclamation appreciates the clarification regarding the fish protection plan for stage 2 and 3 JPOD exports.
47	19	Old and Middle River Flows The proposed Old and Middle River flow criteria are not clearly articulated but appear to be intended to allow for significantly greater exports resulting in increased Old and Middle River reverse flows and reduced Delta outflows below existing conditions that would not provide for the reasonable protection of fish and wildlife as discussed in the State Water Board's Scientific Basis report for potential Sacramento/Delta updates to the Bay-Delta Plan. A clear description of the proposed Old and Middle River flow criteria should be identified for the proposed project, including resolution of the issues enumerated in CDFWs comment letter on the DEIS, along with identification of a clear scientific basis for the criteria and appropriate mitigation for potential impacts.	Please refer to Master Response 4, Alternatives Formulation, regarding description of the alternatives. Please also refer to Master Response 1, Responses to General Comments, regarding relationship to other ongoing plans, programs or policies, including the State Water Board's Bay Delta Plan Amendments. See Master Response 5, Adequacy of Analysis and Mitigation, regarding use of best available science and sufficiency of mitigation.
47	20	Delta Smelt Summer-Fall Habitat It is not clear what the effects of the proposed Delta smelt summer-fall habitat action will be and whether they will actually provide mitigation for other aspects of the project as proposed. Additional specificity should be added to the project description regarding decision making, off-ramps, and the goals for the action as identified in CDFWs comment letter.	Potential effects of the proposed Delta Smelt summer-fall habitat action are discussed in the EIS in Section 5.9.1.1, Bay-Delta (specifically see Section 5.9.1.7.6, Delta Smelt, and Section 5.9.1.7.7., Longfin Smelt, for discussion of effects to those species), with additional discussion in Appendix O, Section O.3.3.8, Bay-Delta (specifically see Section O.3.3.8.1, Delta Smelt, and Section O.3.3.8.2, Longfin Smelt, for effects to those species). Regarding the commenter's suggestion that additional specificity is needed for aspects of the Summer-Fall Habitat action: as noted in the description of Alternative 1 (EIS at Section 3.4.5.8, Delta Smelt Summer-Fall Habitat), offramp criteria would be more fully defined through the structured decision making or other review process, with collaborative planning (see EIS within

Ltr#	Cmt#	Comment	Response
			Section 3.4.5.8, Delta Smelt Summer-Fall Habitat, and see Appendix D, Section 4.3.6.8, Delta Smelt Summer-Fall Habitat) being used to develop the Summer-Fall Habitat Plan to meet the stated environmental and biological goals (EIS, Section 3.4.5.8, Delta Smelt Summer-Fall Habitat). Also refer to Master Response 4, Alternatives Formulation, regarding the level of detail included in the project description and alternatives.
47	21	Intervention Measures The proposed project incorporates various intervention measures (e.g., expanded use of hatcheries, adult fish rescue, and trap and haul) to address or ameliorates the effects of the project. These actions are designed to address the adverse effects of proposed operations and temporally enhance the listed fish populations in the project area. However, there would likely be impacts of such intervention measures that could impact the long-term sustainability of these species. Effects from expanded use of hatcheries, especially for salmonids, includes loss of genetic diversity, reduced fecundity, hybridization of hatchery-produced fish with naturally reproduced fish, and straying of returning adults. These effects are well recognized. Clear strategies and mitigation measures for addressing these effects should be included in the proposed project.	The EIS describes potential changes to aquatic resources from operation of the Livingston-Stone National Fish Hatchery (Winter-Run Chinook Salmon) within Appendix O, Section O.3.4.1, Sacramento River. Potential adverse effects of increased hatchery production and minimization of such effects are discussed. The EIS also described potential changes to Delta species from the Delta Fish Species Conservation Hatchery within Section O.3.4.3, Bay-Delta, including discussions of potential beneficial effects, potential negative effects, and minimization of negative effects.
47	22	The proposed introduction of Delta smelt produced in the Fish Conservation and Culture Laboratory to the Delta could have similar adverse effects on the natural population of Delta smelt. The population dynamics of a fish with an annual life cycle (e.g., Delta smelt) could be dominated by the magnitudes of introduction of hatchery-produced fish. Extensive pilot studies should be performed prior to implementation of introduction of hatchery produced Delta smelt to the system to ensure that there are not impacts to the population dynamics and genetic diversity of the natural population.	As the commenter implies, it will be important to perform pilot studies prior to implementation of hatchery produced Delta Smelt; as the EIS states (Appendix O, Section O.3.3.8.1, Delta Smelt), risk management strategies would be employed to limit potential negative effects, which is described in more detail in the ROC LTO BA (see in particular Table 5.16-3, p.5-436).
47	23	The proposed project includes measures to trap and haul salmon to address dewatering from flow fluctuations that may have further impacts. Trapping and transporting juveniles in the middle of their natural migratory routes would stress the fish even further following a stranding event. Such activities would also increase the subsequent potential for adult straying upon their return to the spawning grounds. Accordingly, the proposed project should maximize efforts to avoid stranding relying less on trap and haul activities.	As described in the EIS, Section 3.4.1.7, Intervention Components, trap and haul operations are categorized as interventional operations. Juvenile salmonid trap and haul operations are to be employed in the Sacramento River Watershed if Reclamation projects a Tier 4 year. Tier 4 years are, "anticipated to be drought years when low flows and resulting high water temperature are unsuitable for volitional migration and survival." Trap and haul operations would only be used when water temperature improvements using coldwater pool management (as described in Section 3.4.1.3) are not possible due to insufficient coldwater pool storage, such as is expected under drought conditions. Trap and haul would also be used to rescue adult salmonids and

Ltr#	Cmt#	Comment	Response
			sturgeon from the Yolo and Sutter Bypasses during droughts and after periods of bypass flooding. Description of potential changes to aquatic resources due to adult rescue activities and trap and haul operations are provided in Appendix O, Section O.3.4.1, Sacramento River. The adverse effects described in Section O.3.4.1 related to rescue and trap and haul activities would be minimized through the application of AMM8 Fish Rescue and Salvage Plan (Reclamation 2019), which establishes detailed procedures for fish rescue and salvage to minimize the number of individuals of listed fish species subject to the adverse effects of rescue activities. Any potential negative population-level effects of adult rescue activities under Alternative 1 would be expected to be offset by the benefits associated with increased numbers of the species rescued. Under the No Action Alternative there is no rescue and transport of stranded individuals or trap and haul of juveniles under drought conditions; therefore, the overall population-level effects of these actions under Alternative 1 are expected to be positive relative to the No Action Alternative. Refer to Section O.3.4.1, Sacramento River, for discussion of impacts by species.
47	24	Drought and Dry Year Actions The proposed project identifies that a voluntary toolkit would be developed for the operations of Shasta Reservoir during critical years. In addition, the proposed project identifies that on October 1st, if the prior water year was dry or critical, Reclamation would meet and confer with the fisheries agencies, DWR, and Sacramento River Settlement Contractors on voluntary measures to be considered if drought conditions continue into the following year. If dry conditions continue, Reclamation would regularly meet with this group (and potentially other agencies and organizations) to evaluate current hydrologic conditions and the potential for continued dry conditions that may necessitate the need for development of a drought contingency plan (that may include actions from the toolkit) for the water year. By February of each year following a critical hydrologic year type, Reclamation would report on the measures employed and assess the effectiveness. The toolkit would be revisited at a frequency of not more than 5 years after the Record of Decision. While voluntary measures are certainly encouraged, the proposed project should include specific drought year commitments for evaluation, planning, and management as well in order to ensure the protection of winter-run and other salmonid runs and compliance with the requirements of Order 90-5 which requires Reclamation to take actions under its control to provide for	Please refer to response to comment 47-7 and Master Response 1 for compliance with Water Right Order 90-5. Please also refer to Section 3.4.1.4 for a description of the temperature management approach for Alternative 1.

Ltr#	Cmt#	Comment	Response
		temperature control on the Sacramento River. Actions that are within Reclamation's control include planning and management of all water diverted under Reclamation's water rights, including Settlement contract deliveries of water under Reclamation's rights. The State Water Board should be added to the list of agencies to be consulted in such processes. Further, it is not clear why there is a limitation on how frequently any drought toolkit should be revisited. It would seem to be appropriate to employ an adaptive management approach with such a toolkit with ongoing and regular assessments of the effectiveness of actions given that these actions can be assessed in real time in many cases and by the end of the temperature control season in nearly all cases.	
47	25	Use of Adaptive Management The proposed project should include adaptive management provisions to regularly review and modify if needed the proposed actions to ensure that they are avoiding jeopardy and providing for the reasonable protection of fish and wildlife.	As described in the EIS, Alternative 1 includes studies to understand how operations interact with fisheries. Reclamation will coordinate with CSAMP to develop a plan to monitor Steelhead populations in the San Joaquin River basin. Additionally, as part of Alternative 1, Reclamation would pursue and implement certain actions through collaborative planning with the goal of continuing to identify and undertake actions that benefit listed species. Collaborative planning would make use of the Collaborative Science and Adaptive Management Program, CVPIA, Interagency Ecological Program, and Delta Plan Interagency Implementation Committee, successors to the forums, or complementary forums (e.g., Voluntary Agreement forums). Each of these programs has established governance, work planning, implementation, reporting, and independent review.
47	26	Additional detail is needed to fully evaluate the potential environmental effects of the project due to the vague nature of many of the actions and the gross summations of some of the results which prevents a meaningful analysis of important intra- annual, monthly, and water year type differences in potential impacts.	Reclamation used the best available science throughout the EIS. A variety of data were obtained for the environmental review process: quantitative data from peer-reviewed published literature on topics specific to the project area; peer-reviewed published literature outside the project area but on topics relevant to alternatives analyzed; unpublished quantitative data from within the project area and from outside of the project area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available. Please see Master Response 5, Adequacy of Analysis and Mitigation for additional discussion regarding the sufficiency of the analysis contained in the EIS.
47	27	Project Impacts on Populations The environmental impact analyses do not provide an assessment of all of the components of the project together and on listed species at the population, ESU, or DPS level. For salmonid species the actions should be assess based on	Please refer to Master Response 1, Responses to General Comments, regarding analysis requirements under NEPA. Also see Master Response 2, Related Regulatory Processes, regarding response to comments related to the previous Biological Opinions and the current process to develop the Biological

Ltr#	Cmt#	Comment	Response
		viable salmonid population (VSP) parameters or equivalent parameters that have been used in the previous BiOps (e.g., 2009 NMFS BiOp). Similar metrics should be used for other species.	Assessment and Biological Opinion for the preferred project. Also refer to Master Response 5, Adequacy of Analysis and Mitigation, for discussion of NEPA requirements regarding impact determinations. The purpose of the EIS is to describe and disclose the impacts of the alternatives and compare alternatives. Reclamation wrote the EIS to evaluate the alternatives as objectively and completely as possible. In preparing the EIS, Reclamation has followed the appropriate legal process and is complying with NEPA regulations. The EIS includes the proposed action of the 2019 Biological Assessment as Alternative 1; however, NEPA does not require an EIS to evaluate the effects of the proposed action on listed species at the population and ESU/DPS level and on critical habitat; this type of evaluation is required in the Biological Assessment prepared under the ESA Section 7 consultation process. The Biological Assessment will be considered in making the final decision and has been added as an appendix to the EIS.
47	28	Increased Exports and Reduced Outflows The DEIS (as specified in Attachment 2-1 model assumptions) evaluates potential changes in flows and exports assuming fixed levels of demands but states that exports will be maximized under the proposed project. It is not clear that the DEIS is capturing the full extent of the additional operational flexibility proposed as part of the proposed project given the modeling assumptions and existing and potential future unmet demands. These issues should be addressed. The DEIS states that the proposed project would increase annual average exports and average spring exports by approximately 1,700 cfs during a sensitive time period for fish species in the Delta also resulting in reductions of outflows and low salinity habitat for Delta smelt, longfin smelt, and other species and impacts to salmonids migrating through the Delta.	The commenter describes concern regarding the capacity of Alternative 1 to maximize operational flexibility. They suggest explicit discussion regarding the effect of modeling assumptions and projected changes to demand on modeled delivery results. The text in Attachment 2-1 describes a proposal to maximize exports while minimizing entrainment of fish and protecting critical habitat, not just maximizing exports. In modeling of ALT1 (described in Section 3.4), assumptions are made. Of these assumptions, the most significant is the modeled approach to Summer/Fall Delta Smelt Habitat. As described in Appendix H, potential impacts and benefits of Alternative 1 could range between what is described in results of Alternative 1 and No Action Alternative. Modeled demands are maintained as constant across all alternatives for consistency in comparative analysis The commenter reiterated the EIS's conclusions that the preferred alternative's increase in exports would result in reductions in Delta outflow and Delta low salinity habitat, but the commenter does not raise further significant environmental issues. Effects of reductions of outflow and low salinity habitat are described in the EIS in Section 5.9, Aquatic Resources. Specifically, see Section 5.9.17, Bay-Delta, for discussion of project-level effects to aquatic resources of the Delta, including impacts from reductions in Delta outflow and reduced area of the low salinity zone water. These effects are more fully discussed in Appendix O, Section O.3.3, Alternative 1 – Project-Level Effects. Also see Section O.3.4,

Ltr#	Cmt#	Comment	Response
			Alternative 1 – Program-level Effects for discussion of potential effects of food subsidies, habitat restoration, predator removal program, and other program-level actions that are expected to benefit Delta species and salmonids.
47	29	Delta Smelt It is well documented that Delta smelt population size has been declining during recent years, despite protective measures placed in the 2008 USFWS BiOp. Existing and emerging scientific information suggests that Delta outflows may be important to all life stages of Delta smelt and the quantity and quality of their habitat in the Bay-Delta estuary. However, the proposed actions would reduce Delta outflow, especially during the fall (September through November) when outflow appears to be important to the growth of juvenile and subadult Delta smelt. The proposed change is based on only two years (2011 and 2017, both wet years) of data and only one year in which the study was fully implemented (2011), which does not appear to provide sufficient data to inform such a change. Operations under the preferred alternative are expected to adversely affect the Delta smelt population through increased predation and entrainment, decreased food availability, and decreased size and location of low salinity habitat (Section 5.9.1.7.6; Appendix O, Section O.3.3.8.1). These adverse effects are expected from reduced Delta outflows, increased south Delta water exports, and hydrological and salinity conditions affecting the extent of Delta smelt habitat. Despite such adverse impacts on Delta smelt no clear mitigation measures or operational modifications to address these impacts are identified. The DEIS only vaguely describes the management of potentially lower Old and Middle River flows; potential, yet not proven, positive summer-fall habitat actions; and introduction of captive-bred Delta smelt. However, there is significant uncertainty associated to the effectiveness of these measures, and it is not clear whether these actions would mitigate for the impacts from the proposed project. Additional mitigation measures should be proposed, including measures to maintain sufficient Delta outflows and reduce reverse flows.	As the commenter notes, the EIS describes several potential negative effects to Delta Smelt from the preferred alternative, as well as describing management actions related to Old and Middle River flows and the summer-fall habitat action. It is acknowledged that there is some uncertainty related to these actions, and as such the preferred alternative includes key governance functions (described in the EIS at Section 3.4.8, Governance) to address ESA Section 7 commitments, including those related to Old and Middle River flows and the summer-fall habitat action. Key among the governance functions are chartering of independent panels and four-year reviews, which will allow the efficacy of Alternative 1 to be assessed and determine whether implementation of alternative strategies would be needed to be proposed, for example. Please also refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding sufficiency of mitigation included in the alternatives.
47	30	Longfin Smelt Several analyses have correlated longfin smelt and other species abundance levels, with Delta outflow or X2, especially during the December-May period as described in the State Water Board's Scientific Basis Report in support of potential Sacramento/Delta updates to the Bay-Delta Plan. The DEIS states that Delta outflows under the Preferred Alternative would be reduced by several	With respect to potential increases in entrainment of Longfin Smelt that the commenter suggests could occur because of lower Old and Middle River flows, as noted in the EIS, Section 5.9.1.7.7, Longfin Smelt, although entrainment risk may increase, historical estimates suggest that proportional (i.e., population-level) losses would be limited; see more detailed discussion in Appendix O, Section O.3.3.8.2, Longfin Smelt.

Ltr#	Cmt#	Comment	Response
		hundred to several thousand cubic-feet, per second in April and May (Appendix O, Section 0.3.3.8.2, page 0-300) that could negatively affect longfin smelt. In addition, during April through May, an important period for avoiding juvenile longfin smelt entrainment in the south Delta, reverse flows in the interior Delta would be appreciably more negative, indicating that longfin smelt entrainment risk would be greater. The DEIS suggests that the Delta habitat conservation measure would provide mitigation for these issues. However, there is significant uncertainty regarding the effectiveness of these measures, and it is not clear whether these actions would address the potential adverse effects on longfin smelt. Additional mitigation measures should be proposed, including measures to maintain Delta outflows and reduce reverse flows.	With respect to potential effects to Longfin Smelt abundance as a result of changes in Delta outflow, please see Master Response 7. Also refer to Master Response 5, Adequacy of Analysis and Mitigation, regarding sufficiency of mitigation.
47	31	Fall-Run Chinook Salmon The DEIS acknowledges that the proposed project would increase entrainment risk of fall-run Chinook salmon and states that pulse flows on the Sacramento River would offset this risk to some extent. However, it is unclear that the pulse flows would provide adequate mitigation. Further, the pulse flows would not occur in every year and would not occur in drier years when impacts to fall-run Chinook salmon could be highest. A quantitative assessment of potential impacts should be provided and mitigation measures should be proposed, including measures to avoid negative flows in the interior Delta.	Refer to Master Response 5, Adequacy of Analysis and Mitigation regarding the sufficiency of analysis and of mitigation developed. Please refer to Master Response 7, Aquatic Resources, regarding Sacramento River Seasonal Operations, Spring Pulse Flows, and Coldwater Pool Management, including discussion of the balancing of the use of storage in spring versus maintenance of coldwater pool for avoidance of impacts on incubation in summer and fall. Also refer to Master Response 7 regarding the appropriateness of qualitative analysis of aquatic resources in the EIS.
47	32	Stanislaus River Salmonids The Preferred Alternative proposes to change the operations of New Melones Reservoir by reducing flow requirements in wet and above normal water years to drier year criteria. The proposed Stanislaus River operations also propose to change the compliance location of dissolved oxygen requirement (during June 1 to September 30) from Ripon to Orange Blossom Bridge, about 31 river miles upstream. This proposal effectively reduces the amount of habitat that would be protected by 31 miles.	The proposed measures make strategic alterations that are intended to have the least potential effect. Revisions to normal and wet water year flow schedules are in conditions that are already optimized due to high precipitation and run-off. Flow releases from facilities during these years have less of an impact and the relatively mild differences when considering run-off are unlikely to lead to an impact. Regarding the water quality compliance location, much consideration was made as to where key biological activity occurs and what may result in downstream changes if the compliance location was moved. Changes to dissolved oxygen would generally remain above 6 mg/l and not result in a change to fitness. Please refer to the EIS for discussion of potential effects from reduced flow requirements and from relocation of the dissolved oxygen compliance point (see EIS at Section 5.9.1.5, Stanislaus River, and Appendix O at Section O.3.3.6, Stanislaus River). Also see Master Response 7, Aquatic Resources, regarding relocation of the Stanislaus River compliance point.

Ltr#	Cmt#	Comment	Response
47	33	The proposed project would result in reduced flows in the Stanislaus River below Goodwin Dam (Appendix F, Table 37-1) and at the mouth (Appendix F, Table 37-1), especially during May and June. Additionally, the operations would result in higher water temperatures at the Orange Blossom Bridge location during the June through August period compared to no action alternative (NAA). The long-term monthly average water temperatures under Alternative 1 are 1.3 °F, 0.9 °F, and 0.5 °F higher in June, July, and August, respectively, than those under the NM. The differences in water temperatures between Alternative 1 and the NAA are even larger during dry and critical years. The extent of higher water temperatures under Alternative 1 than the NAA become greater at further downstream location at the river mouth with higher temperature and for longer duration at this location. The higher temperature and reduced flows in the Stanislaus would result in adverse effects to the juvenile fish rearing in the Stanislaus River and the adults migrating upstream.	Revisions to flow in May and June represent time periods when the outmigrant activity is significantly drawing down. Late outmigration generally occurs in wetter water years when runoff and atmospheric conditions expand the outmigration window. Flow releases solely from project facilities in May and June cannot overcome ambient warming conditions that can become stressful during these periods due to atmospheric temperatures. Juvenile rearing fish occur significantly higher in the watershed and would not be affected due to revised flows and temperature in the lower river. Coldwater refugia occurs in upper reaches were juveniles are known to occur and are generally protective of oversummering salmonids. Please refer to the EIS for additional discussion of potential effects from reduced flow requirements and from relocation of the dissolved oxygen compliance point (see EIS at Section 5.9.1.5, Stanislaus River, and Appendix O at Section O.3.3.6, Stanislaus River). Also see Master Response 7, Aquatic Resources, regarding relocation of the Stanislaus River compliance point.
47	34	The proposed changes to Stanislaus River flows may reduce the number of fall-run Chinook salmon that return to the Stanislaus River to spawn and eliminate the progress that was made on the Stanislaus River since implementation of the 2009 NMFS BiOp flows on the Stanislaus River. Annual escapement data collected by CDFW shows an increase in returning adult fall-run Chinook to the Stanislaus River approximately two years after Stanislaus River flows from the biological opinion were started, see Figure 1 [Exhibit 1]. Two other Lower San Joaquin River tributaries, the Tuolumne and Merced Rivers, support fall-run Chinook salmon but were not required to increase spring-time flows. These rivers do not show similar increases in returning adult salmon but show a continuation of very poor returns despite substantial investments in non-flow restoration projects. State Water Board staff recognize that some of the increase in returns to the Stanislaus River may be stray fish from other rivers or hatcheries. However, the increase in returns of fall-run Chinook to the Stanislaus River, regardless of origin, shows that an increasing number of adult fish are finding and using habitat in the Stanislaus River for spawning and rearing. This is an overall improvement in conditions that may be lost with the proposed reduction of Stanislaus River flows associated with the preferred project alternative.	Annual escapement of Chinook in the Stanislaus River is influenced by a number conditions and variables, not solely flow. Water year type, fish predation rates, and even invasive aquatic vegetation impacting upstream river access all can lead to varied returns. The comment suggests that the trend of returns have increased due to the BO, but the 2018 return represented only 2,387 adults, and was a downward trend from 2017 (5,655 adults) and 2016 (9,330 adults; all return data provided from CDFW's GrandTab). In 2016 and 2017, the Merced River observed over 5,000 returning adults. The comment that the Stanislaus River is outperforming other nearby tributaries and reflecting an increasing trend is not supported. Further, the activities in the Merced River (for instance) do appear to support increased production in some years. The assumption that deviating from the 2009 NMFS BO flows would lead to a direct or notable impact is not supported. See the EIS at Section 5.9.1.5, Stanislaus River, and Appendix O at Section O.3.3.6, Stanislaus River for additional discussion of potential effects to fall-run Chinook salmon as a result of implementation of the preferred alternative.
47	35	There are missing references in the DEIS that should be identified. For example, the following citations were not listed in the references (Appendix B):	Thank you for noting the missing references.

Ltr#	Cmt#	Comment	Response
		(Gross et al. 2018), (Korman et al. 2018), (Smith et al. 2018), (Hammock et al. 2019) cited in DEIS (Draft EIR, page 1-9); (Reclamation 2019) cited in Appendix O.	Reclamation 2019 was referenced in Appendix O of the Draft EIS as U.S. Department of the Interior, Bureau of Reclamation (Reclamation). 2019. Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project and State Water Project. Final Biological Assessment. Central Valley Project, California. Mid-Pacific Region.
47	36	[Exhibit 1: Figure 1 Chinook Salmon by Lower San Joaquin River Tributary]	This exhibit was provided by the commenter in support of their comments which are responded to in these responses to comments. No further response is necessary.