State Water Resources Control Board

TO: Department of Water Resources (DWR)
Attention: Delta Conveyance Office

VIA ELECTRONIC MAIL
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ORIGINAL SIGNED BY

FROM: Diane Riddle
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DIVISION OF WATER RIGHTS

DATE: December 16, 2022

SUBJECT: COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE DELTA CONVEYANCE PROJECT

This memorandum provides comments on the California Department of Water Resources' (DWR) July 27, 2022, Draft Environmental Impact Report (Draft EIR) for the Delta Conveyance Project (Project). The State Water Resources Control Board (State Water Board) and Central Valley Regional Water Quality Control Board (Central Valley Water Board) (collectively Water Boards) appreciate the opportunity to comment on the Draft EIR.

General Comments

The mission of the Water Boards is to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use for the benefit of present and future generations. The State Water Board administers water rights in California, including those of the State Water Project (SWP) and Central Valley Project (CVP). The State and Regional Water Boards also have primary authority over the protection of the State's water quality and drinking water. To protect water quality, the State and Regional Water Boards develop water quality control plans that designate beneficial uses of water, establish water quality objectives to protect those beneficial uses, and include a program of implementation to

achieve the objectives. Water quality control plans also include requirements for monitoring, special studies, and reporting. These water quality control plans include the State Water Board's Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) and the Central Valley and San Francisco Bay Regional Water Boards' Water Quality Control Plans for the Central Valley and San Francisco Bay.

The Water Boards will have discretionary approvals over water right and water quality aspects of the Project and are responsible agencies for the Project pursuant to the California Environmental Quality Act (CEQA). As responsible agencies under CEQA, the Water Boards must review and consider the environmental impacts of the Project identified in the EIR that are within their purview and reach their own conclusions on whether and how to approve the Project. (Cal. Code Regs., tit. 14, § 15096, subd. (a).) Specifically, activities that will require approval by the Water Boards include changes to the SWP's and potentially the CVP's water rights to add points of diversion of water to those rights, water quality certification pursuant to Clean Water Act section 401,[1] National Pollutant Discharge Elimination System Permits (NPDES),[2] and potentially other water quality approvals such as a Construction Storm Water General Permit,[3] an Industrial Storm Water General Permit,[4] Waste Discharge Requirements,[5] and a Dewatering Permit.[6] The EIR is also expected to provide information necessary to inform the Water Boards' decision making under the California Water Code, including whether and under what conditions needed approvals should be granted.

On April 15, 2020, the Water Boards submitted a comment letter (attached) on DWR's Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Project. The Water Boards identified issues that should be addressed in the development of the Draft EIR, including issues related to the CEQA baseline upon which alternatives are

[1] A permit pursuant to Section 404 of the Clean Water Act is required from the United States Army Corps of Engineers (USACE) because the Project will involve the discharge of dredged or fill material in navigable waters or wetlands. In connection with the USACE permit required for this Project, a Water Quality Certification must be obtained from the State Water Board.

[2] If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a NPDES permit. If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a NPDES permit.

[3] Dischargers whose project disturbs one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ.

[4] Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

[5] If USACE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement permit to be issued by the Central Valley Regional Water Quality Control Board.

[6] If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Regional Water Quality Control Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145.

compared; evaluation of a range of operational alternatives, including alternatives that incorporate possible updates to the Bay-Delta Plan; impacts that should be evaluated on aquatic ecosystems and species, water quality, and legal users of water; evaluation of climate change effects; and monitoring and evaluation actions under the proposed Project. Water Boards staff reviewed the Draft EIR for the major issues identified in the NOP and provide the following general comments and specific comments identified in the attached table.

Baseline Regulatory Conditions:

For the evaluation of Project impacts, the Draft EIR assumes baseline conditions include State Water Board Decision 1641 (D-1641) implementing the 1995/2006 Bay-Delta Plan, the 2019 Biological Opinions (BiOps) issued by the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), and the 2020 Incidental Take Permit (ITP) issued by the California Department of Fish and Wildlife (CDFW) on the Coordinated Long-Term Operations (LTO) of the SWP and CVP. The State Water Board's comments on the NOP recommended that the EIR evaluate the effects of the Project with and without the recent 2019 changes to the BiOps. The State Water Board indicated that it is important to understand the effects of the 2019 BiOps in combination with the proposed Project because the State has filed suit on the 2019 BiOps which may result in modifications to or invalidations of those BiOps. In addition, the changes to the BiOps are not well understood because they were made recently and have not been fully implemented due to court orders and drought conditions. The 2019 BiOp changes could have large effects on export operations and Delta hydrodynamics as well as aquatic species (Reclamation's Environmental Impact Statement identified that the 2019 BiOp changes could result in increases in exports of up to 600 thousand acre-feet per year on average given existing infrastructure). These effects in combination with the effects of the Project should be evaluated and disclosed. Given the unknown outcome of the litigation and current BiOp reconsultation process, the Water Boards continue to recommend evaluation of both regulatory baselines.

The Draft EIR also does not include an evaluation of recent updates to the Bay-Delta Plan. In 2018, the State Water Board updated the Lower San Joaquin River Flow and southern Delta salinity objectives and associated program of implementation in the Bay-Delta Plan (2018 Bay-Delta Plan). The State Water Board is currently in the process of implementing these updates. Appendix 4C of the Draft EIR (page 4C-2) states that the updated elements of the Bay-Delta Plan are not included in the regulatory baseline conditions in the Draft EIR. The Draft EIR states that 2018 Bay-Delta Plan update elements were not included because the south Delta salinity standards metrics of compliance are not yet developed to the point that they can be modeled. However, this does not explain why flow objectives are not evaluated in the Draft EIR. State Water Board staff are available to assist with the development of scenarios that serve this purpose.

Project Operational Alternatives:

The Draft EIR states that the alternatives evaluated in the EIR are the result of an extensive screening process. However, the Draft EIR only includes construction and conveyance capacity related alternatives, despite comments provided by the State Water Board on the NOP and on other occasions indicating that a reasonable range of operational alternatives should also be evaluated given that the operations of the project will have long term effects on the environment well beyond construction. Instead, the Draft EIR includes alternatives combining three tunnel alignments, three north intake locations, and conveyance capacities ranging from 3,000 cubic feet per second (cfs) to 7,500 cfs. The Draft EIR presents Alternative 5 (Bethany Alignment with 6,000 cfs conveyance capacity from two north Delta intake locations, Intakes B and C) as the proposed Project.

The Draft EIR provides only one set of operations criteria for the Project. The Draft EIR also includes an evaluation of a possible alternate regulatory regime in Appendix 4C that includes provisions from the March 2022 Voluntary Agreements (VAs) Memorandum of Understanding proposing voluntary measures for the update and implementation of the Bay-Delta Plan. However, this scenario does not include specific proposed operating criteria for the Project and includes assumptions that are not proposed operating constraints, as described further below.

Water Board staff recommend the EIR evaluate a reasonable range of operational alternatives in order to provide the Water Boards and other responsible agencies with analyses to inform their decision-making processes. This is particularly important given that pursuant to the Delta Reform Act, the State Water Board will need to include appropriate Delta flow criteria for the Project in any approval of a water right change petition needed for the project. These alternatives should include an evaluation of flow criteria for the Project that would improve conditions for native fish species, which are currently in poor condition given the current cumulative impacts to native fish and wildlife species resulting from existing flow modifications and other activities explained in the State Water Board's 2017 Scientific Basis Report in support of potential updates to the Bay-Delta Plan. Flow criteria that would improve Delta outflows, reduce fish entrainment and impingement at SWP (and possibly CVP) diversions, and improve cold water management without redirected impacts to native fish species should be evaluated.

Specifically, the EIR should evaluate a scenario that is consistent with the State Water Board's efforts to update and implement the Bay-Delta Plan to improve protections for native fish species. As mentioned above, the State Water Board updated the Lower San Joaquin River Flow and southern Delta salinity objectives in the Bay-Delta Plan in December 201 and is proceeding to implement these objectives. In July 2018, the State Water Board released a Framework[7] for potential updates to Sacramento River and

[7] The Framework can be found at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf

Delta tributary inflows and cold-water habitat, Delta outflows, and interior Delta flow provisions included in the plan based on science summarized in the State Water Board's Scientific Basis Report[8]. These possible updates to the Bay-Delta Plan should be evaluated in the EIR as possible operating constraints on the Project that would mitigate the potential impacts of the Project on fish and wildlife. Although the EIR determines that with mitigation operational impacts from the Project would be less than significant, as explained further below, there is scientific uncertainty concerning whether the habitat restoration actions proposed as mitigation for reduced Delta outflows and other impacts from the Project will be capable of reducing impacts to less than significant levels, particularly with respect to cumulative impacts. Further, while more stringent operational constraints on the Project would not be expected to have additional significant impacts that require evaluation under CEQA, specific evaluations of possible interactive effects would confirm this conclusion and ensure adequate CEQA documentation for the Board's decision-making processes, thereby avoiding possible delays in processing DWR's, and possibly Reclamation's, water right change petition. An analysis of the amount of water that would be available for export using Project facilities if more stringent flow criteria were imposed would also serve to inform the Board's determination concerning what flow criteria are appropriate for the Project.

In addition to more stringent flow criteria, the Water Board's NOP comments also recommended evaluation of possible VA measures proposed by DWR and various water agencies. Although the March 2022 VA was evaluated as a possible alternate regulatory regime in Appendix 4C, that modeling "conservatively assumes the proposed project would not divert excess Delta outflow in January through June during times in which total Delta outflow is less than 29,200 cubic feet per second (cfs)." However, this assumption does not appear to be an operating constraint for the proposed Project. While the assumption is not a proposed operating constraint, the high bypass flow assumption significantly affects the results of the modeling and other analyses, making the evaluation of limited utility in understanding how the proposed Project would interact with a VA and what the proposed operating rules should be to ensure VA flows provide intended benefits. The EIR should evaluate specific proposed operating constraints for the Project with a possible VA regulatory regime. While the Water Boards understand that the term of the VA is proposed to be 8 years, there are also provisions in the VA that would provide for extension of the VA. As such, it is important to understand how this and other proposed new water supply infrastructure would interact with the VA, particularly in cases where the projects involve the same water right holders and water rights involved in the VA.

In addition to the above, operations criteria during continuous, multi-year extreme drought conditions similar to the 2012-2016 and the current (2020-2022) periods should be evaluated. This is particularly important given the challenges meeting water quality

[8] The Scientific Basis Report can be found at: https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2022/201710-bdphaseII-sciencereport.pdf

and flow requirements which have occurred during recent drought conditions and the effect that reducing Delta outflows could have on future water quality conditions.

Operations of the North Delta Intakes:

In addition to the above, the EIR should address the following topics related to the proposed operating criteria for the Project as part of alternate operating criteria or as part of the Project (including possible mitigation).

Sweeping and Approach Velocities

The Draft EIR states that the north Delta intakes would be subject to a maximum approach velocity of 0.2 feet per second and a minimum sweeping velocity of 0.4 feet per second at the proposed fish screens (3.16.1.1 Approach and Sweeping Velocity Requirements). Additionally, the sweeping velocity would be at least double the approach velocity to minimize fish drawn to the intakes. The Draft EIR (Section 3.17.2.1 Real-Time Decision-Making Framework) identifies that the average river velocity downstream of the north Delta intakes, estimated as the flow (upstream flow less the diversion flow) divided by the river's cross-sectional area, could be used as a surrogate for the sweeping velocity (page 3-158). The two north Delta intakes would be located in different channel alignments with Intake B on an outside bend of the channel and Intake C on a straight reach. Fish screens located at these locations would experience different hydraulic conditions, e.g., sweeping and approach velocities, even under the same flow conditions. Water Board staff recommend the inclusion of a monitoring strategy to measure and integrate these hydraulic parameters into real-time operational decision making.

The Draft EIR indicates that the approach/sweeping velocity criteria could be relaxed (e.g., allowing for higher approach velocity) when the presence and entrainment risk of Delta smelt at the north Delta intakes is expected to be low based on temperature/calendar off-ramps (page 3-158). However, such relaxation of approach/sweeping velocity criteria without field monitoring for fish presence would risk entrainment of fish species, including Delta smelt and juvenile salmonids. The Project should incorporate fish monitoring to inform relaxation of operating criteria along with a consultation process with regulatory agencies (fisheries agencies and the State Water Board).

Bypass Flow Criteria

Sub-Table A (pages 3-152 through 3-154) provides bypass flow criteria for operations of the north Delta intakes and related Sacramento River flow conditions. The bypass flow criteria in the Draft EIR are the same as those provided in the California WaterFix Project which proposed three north Delta intakes with a maximum diversion capacity of 9,000 cfs. The proposed Project (Alternative 5) would have a maximum diversion capacity of 6,000 cfs. In a study evaluating the effects of the north Delta water

diversions proposed as part of the California WaterFix, Perry et al.[9] (2018a) determined that the October-November bypass rules and Level 3 bypass rules during December-June would considerably increase the frequency and duration of reverse flows at the Sacramento River downstream of Georgiana Slough and the proportion of juvenile salmon entering the interior Delta. Perry et al. (2018a) recommended developing operational rules for the north Delta intakes to control flow reversals that would require detailed real-time predictions of tides and tidally varying river flows in order to account for variation in tidal cycles that affect the frequency, magnitude, and duration of reverse flows at a given Freeport flow. While the proposed Delta Conveyance Project has a lower total possible diversion amount than the California WaterFix Project proposed, it is still possible that the Project could have significant reverse flow effects without appropriate operating constraints. The EIR should evaluate alternative operating constraints consistent with the recommendations of Perry et al. (2018a) that would be more protective of juvenile salmonids.

In a separate study, Perry et al.[10] (2018b) found that as Delta inflows (from the Sacramento River) declined below approximately 1,000 cubic meters per second (m^3/s) (≈35,000 cfs) juvenile salmonid routing into the interior Delta increased and their survival decreased. As inflow declines and tidal influence moves upstream into transitional reaches (defined as the reach between riverine and tidal reaches) in the Delta, both travel time and distance increase because juvenile salmon may be advected upstream on flood tides (Perry et al. 2018b). Based on this research, the EIR should evaluate a range of alternative bypass flows, including higher bypass flow criteria than are currently proposed in the Draft EIR.

The Draft EIR provides three different “Levels” of bypass flow criteria that would be applied during the December through June period. The Draft EIR describes the conditions for moving to higher levels (i.e., from Level 1 to 2, and from 2 to 3) that would allow the Project progressively higher diversions (i.e., less restrictive) at the north Delta intakes. The implementation of bypass flow criteria and progression to the less restrictive diversion criteria could only occur under continued favorable hydrologic conditions (e.g., flows above 20,000 cfs) and when the risks to aquatic resources are low. The EIR should also evaluate alternative operating criteria that would require moving to more restrictive bypass flow criteria (i.e., from Level 3 to 2, and 2 to 1) based on flow and/or fish monitoring.

The proposed minimum bypass flows during October and November are 7,000 cfs; however, the proposed minimum bypass flows during the more sensitive time period for native fish species from December to June are substantially lower at 5,000 cfs

[9] Perry, R.W., J.G. Romine, A.C. Pope, and S.D. Evans. 2018. Effects of the proposed California WaterFix North Delta Diversion on flow reversals and entrainment of juvenile Chinook salmon (Oncorhynchus tshawytscha) into Georgiana Slough and the Delta Cross Channel, northern California: U.S. Geological Survey Open File Report 2018-1028, 46 p., https://doi.org/10.3133/ofr20181028.

[10] Perry, R. W., A. C. Pope, J. G. Romine, P. L. Brandes, J. R. Burau, A. R. Blake, A. J. Ammann, and C. J. 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. 75: 1886–1901. dx.doi.org/10.1139/cjfas-2017-0310.

according to the Sub-Table A. The reasoning for these lower bypass flows should be explained and more protective alternative bypass flows during the December through June period that would provide higher levels of protection for fish residing in the area or migrating through the north Delta intake reaches should be evaluated.

Pulse Protection

The Draft EIR summarizes the conditions for initiation and cessation of (fish) pulse protection criteria in Table 3-14. The pulse protection criteria were developed for the protection of winter-run Chinook salmon and are expected to provide ancillary protection to other anadromous fish species, including steelhead and spring-, fall-, and late fall-run Chinook salmon. The Draft EIR (Section 3.16.1.3 Pulse Protection) states that the pulse protection would be initiated when "a large number, and relatively high concentration, of winter-run-sized juvenile salmonids begin migrating into the Delta from upstream locations" to minimize potential decreases in survival of emigrating salmonids in the north Delta intake reach. However, the initiation criteria for pulse protection described in the Draft EIR is based on flow increases and not fish density in the Sacramento River at Wilkins Slough. For the California WaterFix Project, both the initiation and cessation of the pulse protection operation at the proposed north Delta intakes was informed by fish catch at Knights Landing (Knight Landing Catch Index) (California WaterFix Project ITP 2017). An alternative operating scenario with similar fish catch-based criteria for pulse protection operations should be evaluated in the EIR.

Water Board staff note that the proposed operations include one pulse protection period per water year (after December 1) with the possibility for one additional pulse protection if the pulse period begins before December 1. As stated above, the pulse protection and related low-level pumping criteria were designed to primarily protect winter-run sized Chinook salmon emigrating through the Sacramento River with the first flow pulse. The EIR should also evaluate operating criteria to provide a similar level of protection to other salmonids (spring-, fall-, and late fall-run Chinook salmon and California Central Valley [CCV] steelhead) that might be migrating through the Sacramento River at different times. Previously, the California WaterFix Project ITP (2017) included unlimited pulse protections for winter-run and spring-run Chinook salmon. The EIR should include alternative operating criteria with additional pulse protections that would provide protections for other salmonid fish.

The Draft EIR indicates that a pulse protection period could last for just 5 days or less after the flow peak based on the initiation and ending criteria in Section 3.16.1.3 (page 3-143) and Table 3-15. This could happen during the October-November period when an early-season storm increases flows in the Sacramento River and mobilizes salmonid migration, as occurred in October 2021. The Draft EIR cites the research by del Rosario et al. (2013) for the development of the pulse protection flow criteria and its effective duration. The study (del Rosario et al. 2013) provides information on the patterns of winter-run (sized) Chinook salmon juvenile entry into the Delta, estimated at the Knights Landing rotary screw trap, and Delta exit, estimated at Chipps Island. However, the passage time from Wilkins Slough to Knights Landing and to the north Delta intakes that would inform Project operations has not been determined. The study

by del Rosario et al. (2013) states that the first day that flows at Wilkins Slough reached 400 m^3/s (≈14,000 cfs) or 500 m^3/s (≈17,600 cfs) was one day before the catch spike and within 3-7 days before the median catch (of cumulative catch) at Knights Landing. It determined that the Delta residence time of winter-run Chinook salmon juveniles ranged from 40 to 110 days, with an average of 87 days. Based on this information, the pulse protection and low-level pumping for potentially very short periods, i.e., 5 days, may not provide full protection for the early migrating juvenile salmonids. If a pulse protection begins in the October-November period and ends with five consecutive days of Wilkins Slough flow decreasing after the peak flow, the north Delta intakes could divert a high proportion of the Sacramento River flow that is above the minimum bypass flow criteria of 7,000 cfs. The EIR should evaluate alternative operating constraints that provide for longer bypass flow periods.

Further, the Draft EIR defines the pulse protection criteria as flow in the Sacramento River at Wilkins Slough greater than 12,000 cfs. However, during water year 2021, the flows at Wilkins Slough never exceeded this criteria. The EIR should evaluate alternative operating constraints that would apply when hydrologic conditions meeting the pulse protection criteria do not occur but juvenile salmonids would be migrating.

Spring Delta Outflows (San Joaquin River Inflow to Export [I:E] Ratio)

The EIR should clarify whether the water diverted from the north Delta intakes would be included in assessing the proportional share of export reductions to provide incidental spring outflows during April and May (2020 ITP Condition of Approval 8.10 SWP Proportional Share, 8.17 Export Curtailment for Spring Outflow). The 2020 SWP ITP requires that the SWP reduce exports from April 1 to May 31 of each year to achieve the SWP proportional share of export reductions established by the ratio of San Joaquin River at Vernalis flow to combined CVP and SWP exports (I:E Ratio). The EIR should also clearly describe whether this condition was used as a modeling criterion.

Project Impacts on Water Quality:

Chapter 9 of the Draft EIR evaluates the impacts of the project of water quality. Section 9.3.2 provides a list of conditions for evaluating whether water quality effects resulting from a project alternative would be considered significant under CEQA. Number 8 on that list is “Conflict with or obstruct implementation of a WQCP.” In Section 9.3.4, Cumulative Analysis, the EIR states that “cumulative analysis for water quality in the study area considers past, present, and reasonably foreseeable future projects and programs being completed in combination with the effects of any one of the project alternatives or the No Project Alternative.” Table 9-54 lists the programs, projects and policies evaluated but does not contain the updates and implementation processes for the Bay-Delta Plan described above.

Throughout Section 9.3.3, the Draft EIR states that for whichever water quality constituent is being analyzed, project alternatives would not cause more frequent exceedance of the Bay-Delta Plan objectives for the constituent because project facilities would be operated to objectives as implemented through D-1641. However,

since D-1641 was implemented, water quality and Delta outflow objectives have not been achieved during drought conditions and DWR and Reclamation have requested temporary urgency changes to water right requirements to relax those requirements. The EIR should demonstrate how the Project will be operated to avoid the need for future temporary urgency change petitions (TUCPs) and future violations of water quality and flow requirements. Additionally, D-1641 does not account for all possible water quality concerns in the Bay-Delta, such as harmful aquatic blooms.

Further, the modeling analysis may not fully represent the impacts to water quality if the north Delta Diversion is operated for reasons other than carriage water benefit (such as export water quality benefits) as the modeling assumes. The north Delta diversion could be utilized to a greater extent than the modeling shows, which would affect circulation of water in the Delta, increase residence time, and could lead to a degradation of water quality. In order to understand the full range of possible effects of the project, the EIR should evaluate a a scenario in which the north Delta diversion is used to the greatest extent possible similar to the analysis in Appendix 4B that assumes the opposite.

As noted in the Draft EIR, cyanobacteria blooms are a significant water quality concern in the Delta. The severity and frequency of blooms has increased in the last decade, as have the types of cyanobacteria toxins detected. The Draft EIR concludes that the project would have no significant impact on cyanobacteria blooms. The potential impact is difficult to determine however, because the analysis is incomplete. The impacts of project operations on cyanobacteria blooms were determined by an assessment of changes in bloom drivers at nine assessment locations concentrated in western and north central channels and mainstem rivers. However, the assessment locations did not encompass small and mid-sized tributary channels in the eastern, central, and southern portions of the Delta. The impacts analysis should directly examine potential impacts in small and mid-sized channels (e.g., Disappointment Slough, Turner Cut, North Fork Mokelumne and Grant Line Canal) where responses to subtle changes in water residence time, source water proportion, and water temperature are expected to have greater effects on cyanobacteria growth and persistence than in main river segments. Without assessing potential for increasing cyanobacterial harmful algal blooms (CHABs) across the entire Delta, it is difficult to determine impacts of the proposed Project operations.

Project Impacts on Aquatic Resources:

The Draft EIR uses a 5 percent threshold for determining significant impacts of the Project on fish species (Section 12.3.2 Thresholds of Significance), and states that this threshold was selected based on “best professional judgment” of the authors. The Draft EIR also considers the relative certainty of impacts (e.g., quantitative estimates based on population-level analysis vs. inferences based on changes to habitat indicators) as part of the impact conclusion. The EIR should provide scientific references supporting the use of a 5 percent threshold and the weighting of the relative certainties of impacts, particularly given the degraded status of many native fish species. Such references

should include studies (field-level or model-based) showing the relationships between the aerial extent and quality of rearing habitats and changes in population sizes of fish.

Impacts on Salmonid Species

The Draft EIR only provides qualitative discussions of the Project's potential near-field effects at the north Delta intakes on migrating juvenile salmonids. Fish mortality due to entrainment and impingement and predatory losses at the north Delta diversion intakes have not been quantitatively analyzed or incorporated in the assessment of overall project impact on salmonid species. The Project includes installation of a series of cylindrical tee screens suspended in the water column at the north Delta intakes. The Draft EIR states that the sweeping and approach velocity criteria would limit the potential for fish impingement and injury from the screen and the 1.75 mm screen opening size proposed for the north Delta intake would effectively exclude juvenile salmonids of 22 mm standard length (25 mm fork length) or greater. However, the sited case study on the operation of cylindrical tee screens and their effectiveness in reducing impacts to fish is derived from the Columbia River with a different screen configuration and greater flow than the Delta. The OBAN model for the evaluation of winter-run Chinook salmon escapement used additional five and ten percent mortality rates, as a sensitivity analysis, to account for the potential impacts at the north Delta intakes. The EIR should incorporate consideration of the potential additional mortality attributable to the operation of the north Delta intakes in the analysis of the Project impacts on aquatic species.

The Draft EIR indicates that the proposed Project would result in adverse hydrodynamic conditions, reduced available rearing habitats in the Delta, and reduced through-Delta survival of salmonid species. The proposed Project would generally decrease the survival of anadromous salmonid populations (winter-, spring-, fall- and late fall-run Chinook salmon, and steelhead) migrating through the north Delta intake reach and the Delta. The operations of the Project under the proposed operations criteria (Alternative 5) would result in significant negative population-level impacts on the populations of winter-run and spring-run Chinook salmon and steelhead exceeding the five percent threshold (Impact AQUA-2, 3, and 5). Additionally, through-Delta survival of fall-run and late fall-run Chinook salmon would also be reduced by up to three percent under Project operations (Alternative 5). As discussed above, there would also likely be additional mortality attributable to the near-field effects at the north Delta intakes, which has not been included in these estimates.

Despite evidence of significant population-level impacts, the Draft EIR concludes that Project impacts on salmonid species would be "less than significant" with mitigation measures, citing that the Compensatory Mitigation Plan (CMP) 25[11] would reduce negative hydrodynamic effects and CMP 26[12] would reduce the effects from reduced inundation of riparian/wetland benches (page 3-126). However, the Draft EIR only

[11] CMP-25: Tidal Habitat Restoration to Mitigate North Delta Hydrodynamic Effects on Chinook Salmon Juveniles

[12] CMP-26: Channel Margin Habitat Restoration for Operations Impacts on Chinook Salmon Juveniles

provides the acreages of tidal habitat and linear footages of channel margin and tidal bench habitats in Appendix 3F (Section 3F.4.3) and does not analyze the potential change in fish abundance attributable to habitat restoration (e.g., increased juvenile survival rates). The Draft EIR also does not provide supporting information on how these mitigation measures could reduce Project impacts on juvenile salmon migrating through and rearing in the Delta at levels that would compensate for the population-level decreases of adult escapement estimated based on the life cycle models (e.g., winter-run Chinook salmon population reductions under IOS and OBAN models). The EIR should provide scientific references (field-level or model-based) supporting the relationships between the aerial extent and quality of rearing habitats and changes in population sizes of various fish species.

Water diverted at the north Delta intakes would move the extent of "transitional reaches" (explained as the reach between riverine and tidal reaches; Perry et al. 2018b) further upstream, which would worsen the flow reversal in the mainstem Sacramento River. The Draft EIR cites Perry et al. (2018b) to support the restoration of tidal wetlands as a compensatory mitigation measure to dampen tidally-driven reverse flows to a level that would compensate for the reduced survival of juvenile salmonids resulting from reduced flows in the mainstem Sacramento River and increased routing into the interior Delta (Appendix 3F; Section 3F.4.3.4). However, this reference does not provide any information on the potential benefits of tidal habitat restoration on the hydrodynamics in the Sacramento River reach below the north Delta intakes. The EIR should further analyze the hydrodynamic benefits of habitat restoration as mitigation measures in relation to the population-level impacts on salmonids. In addition, given the uncertainty of the effectiveness of habitat restoration actions to mitigate impacts of the Project, a range of operating criteria should be evaluated for the Project that would avoid impacts regardless of habitat restoration actions.

Winter-Run Chinook Salmon Life Cycle Models

Three life cycle models were used to assess the population-level impacts of the Project on winter-run Chinook salmon: IOS, OBAN, and the Winter-run Chinook Salmon Life Cycle Model (Impact AQUA-2). The IOS model indicates a 9 percent reduction in adult female winter-run Chinook salmon escapement under the proposed Project. The IOS model did not consider the near-field effects of the north Delta intakes, which would be expected to make this reduction in escapement even larger. Similarly, the OBAN model results indicate a 12 percent decrease in winter-run Chinook salmon escapement under the proposed Project compared to existing conditions. When the potential near-field mortality effects are included, a 25 to 36 percent reduction in winter-run Chinook salmon escapement (with 5 to 10 percent mortality) would be indicated under OBAN. In contrast, the Winter-run Chinook Salmon Life Cycle Model results suggest higher spawner abundance (5.19 percent) under the proposed Project compared to existing conditions. The Draft EIR notes the different outcomes among the three life cycle models and suggests that the mechanisms and explanation would be investigated and reported on during the permitting process. The EIR should fully explain these contrasting results and address the near-field effects at the north Delta intakes. As

discussed above, the EIR should also consider a range of operating criteria that would reduce impacts, regardless of habitat restoration actions.

Impacts on Delta and Longfin Smelt

The Draft EIR indicates that the proposed Project would have significant negative impacts on Delta smelt and longfin smelt. The EIR indicates that the Project would decrease the populations of longfin and Delta smelt as the continued operations of South Delta export facilities and the new north Delta intakes would further reduce Delta outflows and reduce the spatial extent and quality of habitats. Project impacts on Delta smelt are considered "significant" as the operations of the north Delta intakes would worsen the conditions for the already critically low population. Operations of the Project would also result in negative population-level impacts on longfin smelt that would exceed the 5 percent threshold based on the analysis of Delta outflow and Fall Midwater Trawl (FMWT) index.

The Draft EIR concludes that impacts of the Project on Delta smelt and longfin smelt would be "less than significant" with mitigation measures, CMP-27 (Tidal Habitat Restoration for Operations Impacts on Longfin Smelt; 1,100 to 1,400 acres) and CMP-28 (Tidal Habitat Restoration for Operations Impacts on Longfin Smelt, 110 to 140 acres). However, the Draft EIR does not provide clear evidence as to how the proposed habitat restoration will reduce significant operational impacts to less than significant. The Draft EIR does not identify specific locations for tidal habitat restoration projects, nor does it evaluate any population-level benefits the restored habitat would provide to Delta smelt and longfin smelt.

Chapter 12 Aquatic Resources refers to Appendices 12B *Bay Delta Methods and Results* for aquatic resources impacts and 3F *Compensatory Mitigation Plan* for evaluation of potential benefits of tidal wetland restoration. Appendix 12B (Section 12B-19) provides methods the Draft EIR used to calculate the benefits of tidal habitat restoration mitigation for longfin and Delta smelt. The methods evaluate potential fish entrainment at the south Delta export facilities based on differing hydrologic conditions (export to inflow ratios) using the DSM2-Particle Tracking Model (PTM) runs but do not identify how the estimated entrainment of particles (assuming they represent larval and juvenile fish) are translated into population-level fish indices (e.g., FMWT longfin smelt index). The EIR should identify the potential locations and aerial extent of tidal wetland restoration projects used in CMP-27 and CMP-28 and evaluate their benefits on Delta smelt and longfin smelt populations using the best available scientific methods, including appropriately accounting for uncertainty related to the outcomes of habitat restoration, which while promising are still uncertain. Additionally, the EIR should clarify if these tidal restoration projects would be additional to those that are already in progress or proposed as part of VAs or other processes. The EIR should also evaluate

the population level effects using the Delta smelt life cycle models[13] (e.g., Polansky et al. 2021; Smith et al. 2021).

Effects of Climate Change on Hydrology

The Draft EIR uses climate change forecasts for future conditions (year 2040) that are warmer (1.8°C to 1.9°C higher temperatures) and wetter than current conditions (2.7 to 4.8 percent higher precipitation) that result in higher inflows to rim reservoirs (by 2.0 to 4.6 percent) and the Delta (by 3.4 percent) (Draft EIR Table 5-1). The Water Board's comment letter on the NOP recommended that the EIR evaluate an overall drier hydrology in the EIR consistent with Governor Newsom's "California's Water Supply Strategy, Adapting to a Hotter, Drier Future" which identifies that hotter and drier weather conditions spurred by climate change could reduce California's water supply by up to 10 percent by the year 2040. Scientific studies[14] have suggested that climate change will bring changes in precipitation patterns (less snow and more rain), higher temperatures, vegetation expansion, and longer growing seasons, which are expected to result in warmer water temperatures and lower annual streamflows than current conditions. The EIR should account for expected reductions in stream flows, including the type of conditions that occurred in 2021 when runoff was almost a million acre-feet lower than expected, resulting in significant water supply management and planning challenges.

A CalSim 3 sensitivity analysis was conducted for the Draft EIR for 2040 conditions under climate change by incorporating the 2040 Median climate projection (Appendix 30A CalSim 3 Results Sensitivity to 2040 Climate Change and Sea Level Projections). Results from the 2040 Median climate projection show generally increasing precipitation patterns in all Central Valley watersheds except the Sacramento River at Shasta and decreasing river runoffs for all watersheds compared to historical conditions centered on 1995 (1981-2010). The 2040 Median projection may represent a more realistic

[13] Polansky, L., K. B. Newman, and L. Mitchell. 2021. Improving inference for nonlinear state-space models of animal population dynamics given biased sequential life stage data. Biometrics 77:352–361. DOI: 10.1111/biom.13267.
Smith, W. E., L. Polansky, and M. L. Nobriga. 2021. Disentangling risks to an endangered fish: using a state-space life cycle model to separate natural mortality from anthropogenic losses. Can. J. Fish. Aquat. Sci. 78: 1008–1029. dx.doi.org/10.1139/cjfas-2020-0251.

[14] Albano, C. M., J. T. Abatzoglou, D. J. McEvoy, J. L. Huntington, C. G. Morton, M. D. Dettinger, and T. J. Ott. 2022. A multidataset assessment of climatic drivers and uncertainties of recent trends in evaporative demand across the continental United States. Journal of Hydrometeorology 23: 505-519. https://doi.org/10.1175/JHM-D-21-0163.1.
Berghuijs, W. R., R. A. Woods, and M. Hrachowitz. 2014. A precipitation shift from snow towards rain leads to a decrease in streamflow. Nature Climate Change 4: 583-586. doi:10.1038/nclimate2246.
Goulden, M. L., and R. C. Bales. 2014. Mountain runoff vulnerability to increased evapotranspiration with vegetation expansion. PNAS 111: 14071-14075.
Milly, P. C. D., and K. A. Dunne. 2020. Colorado River flow dwindles as warming-driven loss of reflective snow energizes evaporation. Science. DOI: 10.1126/science.aay9187.
Udall, B., and J. Overpeck. 2017. The twenty-first century Colorado River hot drought and implications for the future, Water Resour. Res., 53, 2404–2418, doi:10.1002/2016WR019638.

assumption of future hydrologic conditions under climate change based on the available scientific literature that should also be evaluated.

Modeling and Analysis

The modeling and analysis in the Draft EIR is based on CalSim 3 simulations. While CalSim 3 may be an appropriate tool, it is a new model that has not been publicly reviewed, nor fully documented. Water Board staff recognize the challenges in documenting and validating such a complex model, but because the model and the assumptions are not thoroughly documented, it is difficult to fully review the validity of the modeling and assumptions. The Draft EIR should demonstrate that the model reasonably represents the system that is being analyzed. Specifically, CalSim 3 modeling assumptions should be more clearly stated for each alternative. The Draft EIR includes two revised appendices, 5A-B Attachments 3 and 5, that describe detailed assumptions and results for existing conditions and the no project alternatives. However, no such appendices contain assumptions and results for the proposed alternative or other alternatives. In addition to the detailed appendices for each alternative, the EIR should include a table that clearly compares assumptions for each alternative similar to what was provided during the California WaterFix Project water right proceeding.

The water year types in CalSim 3 do not match the historical water year types even though the model assumes historical hydrology. The resulting CalSim 3 water year types include more wetter year types and fewer drier year types than occurred over the simulation period historically. This affects how the results are presented throughout the Draft EIR and when regulatory requirements such as D-1641 requirements are imposed in the model. This portion of CalSim 3 should be fully documented, and a sensitivity analysis should be conducted on the existing conditions scenario that uses historical water year types to help reviewers understand the effect of using simulated water year types instead of historical water year types.

Closing

The Water Boards appreciate the opportunity to provide comments on the Draft EIR for the Project. By participating in the process in an advisory capacity, the Water Boards hope to ensure that a broad range of alternatives is evaluated, and the potential impacts of all the alternatives are fully disclosed. While the Water Boards can provide information that will help guide the Project toward a successful completion of the process, the Water Boards cannot make a prior commitment to the outcome of any regulatory approval by the Water Boards. The State Water Board acts in an adjudicative capacity when it acts on a water right application, change petition, or other water right approval that may be required for or requested in connection with a proposed project. The State Water Board must be an impartial decision-maker, avoiding bias, prejudice, or interest in any adjudicative proceedings conducted in accordance with the State Water Board's regulatory approvals. Accordingly, Water

Board staff will not act as advocates for the project or any particular alternatives during the Delta Conveyance Project processes.

In closing, the Water Boards appreciate the opportunity to continue to participate in an advisory capacity regarding the Water Boards' regulatory and informational requirements. If you have any questions, please contact me at Diane.Riddle@waterboards.ca.gov.

Attachments: Table 1 - Additional Water Board Comments on Draft EIR for the Delta Conveyance Project

State Water Board Comment Letter on the Notice of Preparation of Environmental Impact Report for the Delta Conveyance Project, dated 15 April 2020

cc: Central Valley Regional Water Quality Control Board (via email):
Patrick Pulupa
Adam Laputz
Janis Cooke
Stephanie Tadlock

State Clearinghouse Unit, Governor's Office of Planning and Research, Sacramento (via email)

TABLE 1: Additional Water Board Comments on Delta Conveyance Project Draft EIR

Chapter 3 - Description of the Proposed Project and Alternatives

Section/page/line/general	Comments
Table 3-14/page 3-149	The low-level pumping during the pulse protection period (October-June) is 900 cubic feet per second (cfs). The EIR should further describe how the 900 cfs would be allocated between the two north Delta intakes, since their locations and hydraulics would be different.
3.4.4	Material from the tunnel excavation is proposed to be tested, dried, stockpiled and either reused or permanently stored. In practice, any reuse conditions, restrictions and/or authorizations will likely be included in the Notice of Applicability, or Waste Discharge Requirements issued for the excavations and placement/stockpiling. The EIR should be modified, as appropriate, to reflect this information.
3.18/page 3-160	The adaptive management and monitoring plan for the Compensatory Mitigation Plan is not developed and a timeline for implementation alongside the plan for implementation of the proposed action is not clear and should be identified in the EIR. Further, timelines for the implementation of individual mitigation projects are also not identified and should be (Appendix 3F).
Appendix 3B/page 6	Sediment mercury thresholds were not referenced. The Water Boards suggest using more stringent requirements than hazardous waste thresholds, such as conducting investigations for site specific pre-industrial soil mercury concentrations.
Appendix 3B/page 28	The Draft EIR identifies a plan to reintroduce sediment into the Delta since the project "would entrain 4-6% of the sediment load" from the Sacramento River to the Delta that may negatively impact delta smelt. The sediment reintroduction plan is planned to be developed, peer reviewed, and approved by the fishery agencies and annual monitoring for sediment/turbidity is planned. The Central Valley Regional Water Quality Control Board should be a party to this plan to ensure sediment being reintroduced will not impair beneficial uses. If the proposed project will discharge wastewater with sediment loading and turbidity that could

	affect the quality of surface waters of the State, the proposed project may require coverage under an individual National Pollutant Discharge Elimination System (NPDES) permit.

Chapter 4 - Framework for the Environmental Analysis

Section/page/line/general	Comments
Appendix 5A/Section B/page B-63 and Appendix 4B/Section 4B.1	The CalSim 3 modeling assumes that the north Delta diversion (NDD) would only be used when there is a carriage water benefit and therefore prioritizes south Delta pumping all other times. However, this operational criterion is not defined as part of the proposed Project. The sensitivity analysis in Appendix 4B only analyzes the effect of prioritizing the NDD in December-June. If the NDD were prioritized for reasons other than a carriage water benefit (an export water quality benefit or increased diversion potential, for example, in July-November) the effect on water quality (not just electrical conductivity, EC) in the Delta would be greater than presented in the modeling analysis. To fully analyze the potential impacts on water quality in the Delta, a scenario that prioritizes NDD should also be evaluated in the EIR.
Appendix 4C/Section 4C.3 /page 4C-4	Alternative 5 under the Alternative Regulatory Scenario says that it "conservatively" assumes a condition where exports out of the NDD would be limited if excess Delta outflow is greater than 29,200 cfs. This does not appear to be a proposed operating constraint. The EIR should evaluate actual proposed operating constraints for the Project, as well as a reasonable range of alternatives as described in the main body of this comment letter.

Chapter 5 - Surface Water

Section/page/line/general	Comments
General	CalSim 3 documentation is not complete and does not include a thorough validation. The EIR should show that the hydrology, stream-groundwater interactions, reservoir

	operations, and Delta operations in the model are responding in a way that is similar to the historical record. Additionally, updates such as the water year type module need to be included in the model documentation.
General	CalSim 3 modeling assumptions should be clearly stated for each alternative. These assumptions should be placed in a table so that assumptions for each alternative can be easily compared.
General	The Calsim 3 calculation of water year types does not match historical year types, and CalSim 3 estimates more wetter years and fewer drier years for the modeled period, even though the model uses historical hydrology. This skews the CalSim results as presented in the report, as well as how CalSim 3 represents D-1641 and other flow requirements in the system. We suggest a validation and documentation of this part of CalSim 3, including a sensitivity analysis of how the shifting of year types affect the results. Even though the analysis uses CalSim 3 in a comparative sense, the model should still be representative of the system, and the alternatives being analyzed.
General	It appears that the relaxation of the Delta outflow standard in May and June if the Sacramento River Index is estimated to be below 8.1 million acre-feet (MAF) described in footnote 10 of Table 3 of D-1641 is not being implemented in CalSim 3. This results in higher outflow than would occur in the spring of some dry years. The modeling should be updated to be consistent with D-1641.
General	It appears that the spring Delta outflow (San Joaquin River inflow to export ratio (I:E)) requirement in the 2020 ITP is being applied to both the north Delta and south Delta diversion locations in the CalSim 3 analysis. However, in some years in May there are large increases in exports in Alternative 5 that cannot be explained. The EIR should explain the reason for these increases in exports, as well as whether the I:E provisions are proposed to apply to the north Delta diversions. If not, the modeling should reflect not including those constraints at the north Delta diversion facility.
General	It appears that the Artificial Neural Network (ANN) was not retrained for Alternatives 2a and 4a, which would seem to make the results less reliable for these scenarios, including with respect to changes in exports and Delta outflow. An evaluation of this

	issue should be included in the EIR, including sensitivity analyses or the ANN should be retrained for these scenarios.
Appendix 5A/Section B	The difference between the North Delta Outflow Index (B.3.4) and Net Delta Outflow (B.3.5) in Appendix 5A Modeling Technical Appendix – Hydrology and System Operation Modeling should be clarified. There are no descriptions of these hydrology parameters.
Appendix 5A/Section B-Attachment 4/page B-4	The EIR should provide numerical values in table form for Figure 5A-B4.2. Projected Changes in Average Temperature for Major Watersheds in the Sacramento and San Joaquin River Basins.
Appendix 5A/Section B-Attachment 4/page B-5	The EIR should provide numerical values in table form for Figure 5A-B4.3. Projected Changes in Precipitation for Major Watersheds in the Sacramento and San Joaquin River Basins.

Chapter 8 - Groundwater

Section/page/line/general	Comments
8.19	The Draft EIR evaluates changes in groundwater (GW) elevations using historical data from 1974-2015 to determine levels of significance on GW elevation from proposed Project operations. However, this analysis does not take into consideration current management actions underway through the Sustainable Groundwater Management Act (SGMA). Historical data pre-SGMA management has a lower baseline with a high rate of GW elevation change, i.e., lower groundwater elevations that fluctuate/change frequently. With SGMA implementation, the rate of GW elevation changes may be much lower, and the operation of Delta Conveyance may have a greater impact that should be evaluated in the EIR.
8A.4.1 (Three Stages of Calibration)	One of the objectives of model calibration is stated as: "achieve a reasonable water budget for soil moisture (a component of hydrologic cycle)." It is not clear how this objective is being achieved. The EIR should be revised and also identify whether there is any impact on unsaturated zone (moisture content and water vapor pressure), and

	whether that impact may lead to any negative hydrogeologic outcome (e.g., soil subsidence, contaminant mobilization, sea water intrusion into the aquifer, etc.).
Section 8A.4.3 (PEST Calibration of Parameters)	Calibration of Specific Yield (Sy) is important for a transient GW model, as it affects the GW table fluctuation rate. The EIR should specify whether this parameter was calibrated through Parameter Estimation (PEST).

Chapter 9 - Water Quality

Section/page/line/general	Comments
9.0	This Section states that construction needs to comply with the requirements of the Construction General Permit. Discharges related to project construction also need to comply with requirements of the Central Valley and San Francisco Bay Regional Water Quality Control Boards' Basin Plans and Bay-Delta Plan. The EIR should be revised accordingly.
9.1.4	The current 303(d) list is in the 2020-2022 Integrated Report, adopted by the State Water Board in January 2022. The reference for the 303(d) list should be corrected and Table 9-2 updated as needed.
9.1.5.2	The description of existing water quality conditions includes a description of dissolved oxygen (DO) conditions and associated Total Maximum Daily Loads (TMDLs) for Suisun Marsh and the Stockton Deep Water Ship Channel. The EIR should be updated to recognize existing DO impairments in the Delta that are not addressed by a TMDL or implementation actions. Potential exacerbation by the proposed Project of the DO impairments in all 303d-listed water ways should be investigated. Project-related changes in water flow velocity, water residence time, and proportions of source water with seasonally high chlorophyll resulting from the proposed Project could impact DO concentrations.
9.1.5.4	All references to the mercury TMDL should be updated to "Sacramento–San Joaquin Delta Methylmercury TMDL."

9.1.5.4/page 9-16/lines 3-4	The language on page 9-16, lines 3-4 is inaccurate and should be changed to: "At least 80% of the total mercury flux to the Delta can be attributed to the Sacramento Basin, which comprises tributary watersheds to the Sacramento River and Yolo Bypass."
9.1.5.4/page 9-16/lines 7-9	The text on page 9-16, lines 7-9 is inaccurate and should be changed to: "Cache Creek, and associated Cache Creek Settling Basin, is the major source of inorganic mercury loading to the Yolo Bypass, where mercury loading mostly occurs via transport of mercury-bound sediment (Central Valley Regional Water Quality Control Board 2010. Sacramento-San Joaquin Delta Methylmercury TMDL Staff Report, pg.197)."
9.1.5.4/page 9-16/lines 9-12	The sentence on page 9-16, lines 9-12 is inaccurate. The Delta Methylmercury TMDL Staff Report only states: "SF Bay identified Central Valley outflows via the Delta as one of the principal sources of total mercury to SF Bay…" The citation of Delta Methylmercury TMDL Staff Report should be removed and replaced with: "Mercury loading from the Delta primarily drives mercury concentrations in northern San Francisco Bay, Suisun Bay, and Suisun Marsh (San Francisco Bay Regional Water Quality Control Board 2018:49)."
9.1.5.4/page 9-16/lines 20-22	Text on page 9-16, lines 20-22 is inaccurate and should be changed to: "The flux of methylmercury from Delta open water and wetland sediments is estimated to contribute 36% of the waterborne methylmercury load in the Delta annually, based on an analysis of data from water years 2000 to 2003 (Central Valley Regional Water Quality Control Board 2010. Sacramento-San Joaquin Delta Methylmercury TMDL Staff Report, pg.88)."
9.1.5.4/page 9-16/lines 22-25	Text on page 9-16, lines 22-25 is inaccurate and should be changed to: "Based on data from water years 2000 to 2003, annual estimates determined tributary inflow sources contribute 58% of the methylmercury load in the Delta annually, and wastewater, agricultural lands, atmospheric deposition, and urban runoff contribute approximately 7% of the methylmercury load (Central Valley Regional Water Quality Control Board 2010. Sacramento-San Joaquin Delta Methylmercury TMDL Staff Report, pg.80)."

9.1.5.4/ page 9-16/lines 27-30	The EIR should be revised to include the following text in order to improve the description of the TMDL on page 9-16, lines 27-30: "The Sacramento-San Joaquin Delta Methylmercury TMDL, and associated Basin Plan Amendment, establishes methylmercury fish tissue objectives; load allocations for agricultural drainage, atmospheric wet deposition, open water, tributary inputs, wetlands, and nonpoint source dischargers; and waste load allocations to point source dischargers in the Delta."
9.1.5.5	The text indicates that the role of nutrients in expansion of aquatic macrophytes in the Delta is unknown. A useful reference on the Delta nutrients-aquatic macrophyte relationship that should be considered in the EIR is Berg and Sutula (2015 SCCWRP Technical Report #870). They found that rapid expansion of invasive macrophyte acreage did not correlate with nutrient concentrations, suggesting factors besides nutrients are contributing to the expansion of aquatic plant growth at the scale of the whole Delta.
9.1.5.5	The description of dissolved oxygen problems in Suisun Marsh should be updated to note that the Suisun Marsh DO TMDL was fully approved and became effective in 2019. See the San Francisco Bay Regional Water Board's webpage for the TMDL (Suisun Marsh TMDL (ca.gov)) and the San Francisco Bay Basin Plan, Chapter 7. The TMDL implementation Plan to eliminate impairments addresses marsh habitat maintenance and drainage schedules. Nutrients from the Delta are not a component of the Suisun Marsh DO TMDL.
9.2	The Applicable Laws, Regulations and Programs considered in the assessment of environmental impacts on water quality should include the Water Quality Control Plans for San Francisco Bay (Region 2 Basin Plan) and the Sacramento River and San Joaquin River Basins (Region 5 Basin Plan).
9.2	The Applicable Laws, Regulations and Programs should include the State's Antidegradation Policy. State Water Board Resolution No. 68-16, "Statement Of Policy With Respect To Maintaining High Quality Of Waters In California" ("Antidegradation

	Policy") requires that the quality of existing high-quality water be maintained unless any change will be consistent with the maximum benefit to the people of the state, will not unreasonably affect present or anticipated future beneficial uses of such water, and will not result in water quality less than that prescribed in water quality control plans or policies. The Antidegradation Policy further requires best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the state will be maintained. Any portion of the Delta Conveyance Project that will require a new single-action permit or approval of general permit coverage for a new action will require a full Anti-degradation Analysis to be completed prior to the permit being issued. This is in accordance with State Water Resources Control Board (State Board) Antidegradation Policy in State Board Resolution 68-16. There is currently no Antidegradation Analysis included in the Delta Conveyance Draft EIR. A full Antidegradation Analysis should be conducted prior to any Water Board permitting. It would be beneficial for DWR as well as regulatory agencies and stakeholders if DWR were to conduct the Antidegradation Analysis as part of the EIR.
9.3.2, and Appendices 5A-C, 9E	Some analyses of water quality impacts involved examination of various environmental factors (e.g., temperature, velocities and turbulence, water clarity, hydraulic residence time) that were modeled separately, as described in Chapter 5 appendices. The process of using the various model outputs within qualitative assessments was not clearly explained. Additional description of the process of using outputs of the various models and any decision points leading to the impact conclusions should be added to the EIR. The rationale for selecting different assessment locations for different models (e.g., temperature, hydraulic residence time, and source water fingerprinting) should also be included. Additional information is particularly important for understanding the impact decisions for nutrients, dissolved oxygen, and cyanobacteria impacts.

9.2	One of the thresholds of significance for an environmental impact determination is whether the project would further degrade by measurable levels on a long-term basis a parameter that is already listed as impaired on the 303(d) list. In the case of certain impairments, such as low dissolved oxygen and pesticides, environmental harm can occur when standards are not met or are further degraded for short periods of time. Thus, the criterion "on a long-term basis" is not appropriate for evaluating impacts for all 303(d)-listed impairments in the Delta and should be revisited.
9.3.3.2	The Draft EIR recognizes the need to collect, treat, and store all stormwater runoff and dewatering water for re-use on the site to minimize peak runoff rates. Also, if discharge to surface water bodies is needed, DWR will acquire NPDES permits issued by the Central Valley Regional Water Board. The EIR should include descriptions of how runoff and water and sediment from dewatering activities will be collected, treated, and stored. Chapter 3, Section 3.4.15.5, "Local Water Supply, Drainage, and Utilities" mentions runoff and dewatering management, but does not contain sufficient detail to understand the actions and potential volume(s).
9.3.3.2 and Appendix 3B	The Draft EIR commits to sediment control measures for holding and storing water from dewatering until turbid materials settle. Ponding of runoff or dewatering water can produce methylmercury, and from review of USACE dredging pond storage practices in the Delta, there was a greater increase of methylmercury production after day 3 of water storage. The EIR should include confirmation that dewatered water and runoff will be managed to minimize methylmercury and mercury release. Specifically, water from dewatering and capture of runoff that is discharged to surface water in the Delta must not exceed methylmercury concentrations set by the Delta Methylmercury TMDL. Acceptable concentrations for discharges from settling ponds in the Delta must be less than or equal to 0.06 ng/L in the Delta Methylmercury TMDL Boundary and must be less than or equal to methylmercury concentrations in the receiving water, whichever is the lowest concentration (Sacramento-San Joaquin Delta Methylmercury

	TMDL Staff Report page 70; Basin Plan page 4-105). For releases back into waters outside of the Delta Methylmercury TMDL boundary, ensure levels are not above the California Toxics Rule for total mercury.
9.3.3.2 Construction Impacts on Water Quality	If a proposed project includes construction dewatering and it is necessary to discharge the de-watered groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent (NOI) must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order, approximately 90 days prior to initiating discharge. Additionally, all dischargers seeking authorization to discharge under the Limited Threat General Order shall sample and analyze a representative sample of the wastewater, for the constituents contained in the appropriate column in Table I-1 of the Limited Threat General Order and submit results with the NOI. For other types of projects, such as those that discharge wastewater that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under an individual NPDES permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit, approximately 270 days (9 months) prior to initiating discharge. For more information regarding the NPDES Permit and application process, visit the Central Valley Water Board website.
9.3.3.2	Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website.

9.3.3.2	Dischargers whose projects disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website.
9.3.3.2	On April 2, 2019, the State Water Board adopted the *Procedures for the Discharges of Dredged or Fill Material to Waters of the State* (Procedures). The Procedures became effective May 28, 2020. Applicants proposing to discharge dredged or fill material are required to comply with the Procedures unless an exclusion applies. In accordance with Executive Order W-59-93, the Procedures ensure that the State and Regional Water Boards' regulation of dredge or fill activities will be conducted in a manner "to ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values…" These Procedures also include procedures for the submission, review, and approval of applications for activities that could result in the discharge of dredged or fill material to any waters of the state. All requests for water quality certification must comply with the Procedures.
9.3.3.2	Projects that involve work within a waterway are generally required to obtain water quality certification from the Water Board. All requests for water quality certification must comply with the USEPA's Clean Water Act Section 401 Certification Rule to be considered a valid and complete request. Applicants must submit a pre-filing meeting request thirty days before submitting a 401 Certification application. Coverage under a

	401 Certification must be obtained prior to any work that would impact waters. When the application is submitted, Water Boards staff will have 30 days to review the application and deem it complete or incomplete. If complete, the 401 Certification must be issued on or before the U.S. Army Corps of Engineers (USACE) established Reasonable Period of Time.
9.3.3.2	If dredging activities are anticipated for any construction portion of the proposed Project, the following documentation must be submitted in order to obtain approval under Waste Discharge Requirements: • A completed State Water Board Form 200 requesting dredging operation coverage. • Determination of Project Risk Category and a full description of the dredging and placement operation, dredge and placement site(s), and beneficial reuse. • Pre-Dredge Sediment Evaluation Report including analytical results of sampling approved in the Pre-Dredge Sampling and Analysis Plan to compare analytical results to basin plan and NPDES screening levels. • A Dredge Operation Plan, including a description of best management practices (BMPs) to be implemented at dredge site(s), dredge material placement site(s), and reuse sites to prevent the generation and potential release of pollutants to waters of the state. • The applicable fee for authorization under this Order based on Dredging Discharges in California Code of Regulations, title 23, section 2200(a)(3)(B). • Copies of permits or applications for activities related to dredging from other applicable state and/or federal agencies. • A pre-dredge sediment analysis must be submitted with an application (notice of intent to dredge). When the application is submitted, Water Boards staff will have 30 days to review the application and deem it complete or incomplete. Dredging activity must also comply with the *Procedures for the Discharges of Dredged or Fill Material to Waters of the State***.** Please see previous comment.
9.3.3.2 Impact WQ 6 Mercury	Monitoring data collected from new wetland habitats and comparison locations will be valuable for design of projects beyond the compensatory mitigation. Sediment,

	aqueous, and fish tissue mercury and methylmercury sampling should be included in MMMP efforts and sampling results should be submitted to CEDEN.
9.3.3.2	The EIR should confirm whether Mitigation Measure WQ-6, Develop and Implement a Mercury Management and Monitoring Plan, covers all types of wetland habitat that will be created as part of compensatory mitigation. MM WQ-6 is described as applying to new tidal wetland habitat. However, the compensatory mitigation plan "includes the creation of freshwater emergent perennial wetlands, seasonal wetlands, and tidal habitats" (page 9-113 line 20-21). As indicated by references cited in the Draft EIR, tidal wetlands are generally a sink of methylmercury. Other types of wetlands, such as seasonal wetlands, are considered a source of methylmercury.
9.3.3.2	The Mercury Management and Monitoring Plan language should be revised to include Delta waterways with the following recommended language: "viii. Control sediment mobilization into the tidal habitat and Delta waterways if particulates or sediment is determined to be a key source of mercury (California Department of Water Resources et al. 2020:7-1).
9.3.3.2	We appreciate the commitment to develop and implement methylmercury management approaches consistent with the Sacramento-San Joaquin Delta Methylmercury TMDL. To continue to meet Sacramento-San Joaquin Delta Methylmercury TMDL expectations, the Central Valley Water Board should review the MM WQ-6 Mercury Management and Monitoring Plan, Site-Specific Mercury Management Plans, and Site-Specific Monitoring and Adaptive Management Plans prior to finalization.
9.3.3.2 Impact WQ 7 Nutrients	The evaluation of potential effects on nutrients for Impact WQ-7 relied on total phosphorus (TP) and total nitrogen concentration (TN) data compiled for river and other inputs to the Delta. For the Sacramento and San Joaquin River datasets, averages of TN and TP concentration calculated over the entire 1975-2000 date range were used. It is unclear why the datasets for the main river inputs stop at 2000, since TN and TP concentrations continue to be measured monthly at DWR's Environmental

	Monitoring Program discrete sites (Sacramento River at Hood and San Joaquin River at Vernalis). Also, by grouping a very large date range for the river inputs, changes in trends over time (Beck et al 2018 Estuarine, Coastal and Shelf Science 212:11-22; Novick et al 2015. SFEI Contribution No. 785) are masked. The authors should review the nutrients analysis to determine if including more recent data and/or differentiating time periods by changes in nutrient concentration trends is warranted.
9.3.3.2 Impact WQ 9 Dissolved Oxygen	The assessment of project impacts on dissolved oxygen appropriately included the key environmental factors that affect dissolved oxygen (water temperature, channel velocity, and oxygen-demanding substances). However, the assessment did not adequately cover southern Delta channels that have known dissolved oxygen impairments. The assessment should be expanded to include the temporary barriers project area (overlaps dissolved oxygen impaired waterways). Expansion could include adding temperature and channel velocity assessment locations within impaired waterways and further examining the impact of increased proportion of San Joaquin River source water. The San Joaquin River is a source of phytoplankton and oxygen-demanding detritus as well as nutrients.
9.3.3.2 Impact WQ 14 Cyanobacteria	The impacts on cyanobacteria blooms were determined by assessing anticipated changes in drivers of cyanobacterial harmful algal blooms (CHABs) due to project operations at nine Delta locations. The CHAB assessment locations are further identified in Appendix 9E, page 5. While the assessment of potential CHAB increases at these locations is valuable, the locations are concentrated on the western and north central regions of the Delta and the mainstem San Joaquin River. There is only one location in the southern central portion (Victoria Canal) and none in the southern region of the Delta. Southern central and southern waterways have a predominantly San Joaquin River source fingerprint and are more likely than northern channels to have changes in source water nutrients and water residence time due to north Delta intake operation. Additionally, the south

	Delta channels are affected by the temporary agricultural barriers, which reduce tidal velocities up to ~50% when barriers are in place (DWR, 2021 Effects of Temporary Barriers Project on Dissolved Oxygen, report to the Central Valley Water Board). Eastern and Central Delta channels that connect to the San Joaquin River are also missing from the CHAB analysis. Examples of waterways that have had cyanobacteria blooms include Disappointment Slough, 14-mile Slough, and Turner Cut. It is important to examine how changes in water residence time or increases in proportion of Mokelumne River and eastside tributary waters will affect HAB growth. The EIR should include complete CHAB assessments for southern Delta channels (e.g., Old and Middle Rivers near Fabian Tract and Union Island, Grant Line Canal and channels surrounding Jones and Empire Tracts). Additionally, the CHAB assessment should be expanded to include small and medium-size channels in the Central Delta. We expect that DSM2 can effectively model the CHAB drivers of concern for the assessments (water residence time, temperature, clarity, nutrients, and channel velocity) in these additional locations. Water Board staff are willing to assist with locating additional CHAB supporting data if helpful. Without assessing potential for increasing CHABs across the entire Delta, it is difficult to determine the impacts of proposed Project operations.
9.3.4	The cumulative impacts should be revised to include DWR's salinity control barriers.
9.3.4 Cumulative Analysis	The Draft EIR states that the cumulative effects analysis for water quality in the study area considers past, present, and reasonably foreseeable future projects and programs being completed in combination with the effects of any one of the Project alternatives or the No Project Alternative. Table 9-54 lists the programs, projects and policies evaluated but does not contain the 2018 update to the Bay-Delta Plan's San Joaquin River flow and southern Delta salinity components of the Bay-Delta Plan and their upcoming implementation or the expected Sacramento/Delta updates and implementation of the Bay-Delta Plan.

9.3.4	The reference in Table 9-54 to Regional San. is incorrect. The biological nitrogen removal component of Regional San's Echo Water project is complete. The entire project will be complete in 2023. The EIR should be corrected accordingly.
9.3.4	The Salt and Nitrate Control Programs and the Control Program for Salt and Boron Discharges into the Lower San Joaquin River are listed as considered as part of cumulative impact analyses in Table 9-54. These analyses are discussed in Sections 9.3.4.1 and 9.3.4.2. However, these programs are not included in the general table listing all of the cumulative impact assumptions considered as part of the analysis of the proposed Project (Table 3C-2, Appendix 3 – Section 3C.3.3 Cumulative Impact Assumptions). The EIR should clarify that these programs were considered as part of the cumulative analyses in Chapter 9, Water Quality by putting them in Table 3C-2. If these programs were not considered as part of the cumulative impacts analyses in Chapter 9, the cumulative impact analysis should be revised to include them.
9.3.4 and Appendix 3C	The following projects and programs should be added to the cumulative inputs analysis as existing or reasonably foreseeable: • Water Quality Control Plan for the Sacramento River and San Joaquin River Basin • Water Quality Control Plan for the San Francisco Bay Basin • The 2018 update to the Bay-Delta Plan, including the Comprehensive Operations Plan and Monitoring Special Study for Bay Delta Plan South Delta Salinity Objectives (COP-MSS) • Central Valley Salt and Nitrate Control Program • California Freshwater and Estuarine Harmful Algal Bloom Program • San Francisco Estuary Blueprint • Central Valley Water Board's Tribal Beneficial Use Designations Project
9.3.4.2	The analysis of cumulative impacts on cyanobacterial harmful algal blooms (CHABs) should be expanded.

	The cumulative impacts analysis consists of a comparison of impacts of project alternatives in the context of current and reasonably foreseeable projects plus climate change. The analysis concludes that the project alternatives would not substantially alter water temperatures, water residence time, or other drivers of CHAB growth relative to existing conditions. The expected outcome of climate change, however, is to worsen the severity and frequency of CHABS beyond existing CHAB conditions. CHABs are expected to expand in frequency and severity due to climate change (e.g., Paerl and Huisman, 2009. Environmental Microbiology Reports 1(1) 27-37), including in the Delta (Berg and Sutula, 2015. SCCWRP Technical Report 869). The EIR should evaluate the proposed Project's contribution to the cumulative impacts of climate change on CHABs in the Delta. Specifically, the cumulative impacts analysis should include the following: • Impacts of project alternatives examined in the context of expected future CHAB conditions. In areas of the Delta where beneficial uses would already be adversely affected by CHABs, even marginal exacerbation of CHABs due to proposed Project operations may be significant and should be avoided or mitigated. • Description of whether and how project operations may need to be adjusted or adaptively managed to assist with managing CHABs conditions made worse by climate change.
9.3.3 Impacts and Mitigation Approaches (throughout the section)	The Draft EIR indicates for most water quality parameters that project alternatives would not cause more frequent exceedances of the Bay-Delta Water Quality Control Plan for (constituents) because proposed Project facilities would be operated to meet objectives as implemented through D-1641. The EIR should explain how the Project would impact current inability to meet D-1641 requirements during extended dry

	conditions (e.g., 2014, 2015, 2021, 2022). Further, not all water quality constituents of concern have specific water quality objectives, which should be acknowledged and addressed in the EIR.
Appendix 9B	Although two of the assessment locations for source water fingerprinting are labeled as representing the Southern Delta region (Old River at Hwy 4 and Victoria Canal), the assessment is missing analysis in channels that are east and south of these locations. The EIR should add assessment locations for source water flow percentages that represent Old and Middle River sections around Fabian Tract and Union Island and nearby channels with limited flushing, taking into account that hydrology in these locations differs from that in Old River north of the pumps and Victoria Canal.
Appendix 9H	Total mercury, methylmercury, and fish tissue methylmercury impacts were assessed by using the DSM2 model. The EIR should describe the details of how mercury impacts were modeled.
Appendix 9H	Some of the tables reported 0.00 mercury concentration but did not provide total (summed) project alternative impacts. That data should be presented in such a way to make the cumulative projected impact clear.
Chapter 9/page 16	The discussion of mercury loading should be updated as follows for accuracy: "An analysis of total mercury loading to the Delta during water years 1984 to 2003 determined the Sacramento River is the primary tributary source of mercury to the Delta in dry years, but the proportion of mercury loading from the Yolo Bypass increases in wet years to the extent that it is comparable to that of the Sacramento River (Central Valley Regional Water Quality Control Board 2010a:134)."
Chapter 9/page 16	The discussion of the Cache Creek Settling Basin should be updated as follows for accuracy: "Cache Creek, and associated Cache Creek Settling Basin, is the major source of inorganic mercury loading to the Yolo Bypass, where mercury loading mostly occurs via transport of mercury-bound sediment (Central Valley Regional Water Quality Control Board 2010a:197)."

Chapter 9/page 16	One of the citations to the last sentence of the first full paragraph is inaccurate. The information on page 197 does not support this sentence. The Delta Methylmercury TMDL Staff Report just states: "SF Bay identified Central Valley outflows via the Delta as one of the principal sources of total mercury to SF Bay…" The citation of the TMDL Staff Report should be removed and the following language added: "Mercury loading from the Delta primarily drives mercury concentrations in northern San Francisco Bay, Suisun Bay, and Suisun Marsh (San Francisco Bay Regional Water Quality Control Board 2018:49)."
Chapter 9/page 16	The discussion of methylmercury flux should be updated as follows for accuracy: "The flux of methylmercury from Delta open water and wetland sediments is estimated to contribute 36% of the waterborne methylmercury load in the Delta annually, based on an analysis of data from water years 2000 to 2003 (Central Valley Regional Water Quality Control Board 2010a:88)."
Chapter 9/page 16	The discussion of methylmercury contributions should be updated as follows for accuracy: "Based on data from water years 2000 to 2003, tributary inflow sources contribute an estimated 58% of the methylmercury load in the Delta annually, and wastewater, agricultural lands, atmospheric deposition, and urban runoff contribute approximately 6% of the methylmercury load (Central Valley Regional Water Quality Control Board 2010a:80)."
Chapter 9/page 16	All references to the methylmercury TMDL should be changed to "Sacramento–San Joaquin Delta Methylmercury TMDL."
Chapter 9/page 16	The discussion of the mercury TMDL should be updated as follows for accuracy: "The TMDL and associated Basin Plan Amendment establishes methylmercury fish tissue objectives; load allocations for agricultural drainage, atmospheric wet deposition, open water, tributary inputs, wetlands, and nonpoint source dischargers; and waste load allocations to point source dischargers in the Delta."
Chapter 9/page 113	The Draft EIR labels impacts of compensatory mitigation acreage on methylmercury production as potentially significant without mitigation; reduced to less than significant with implementation of a monitoring plan. Because the Delta is impaired due to

	mercury, there is no assimilative capacity and even a slight increase is unacceptable. The EIR should include detailed text about assimilative capacity in Delta subareas and state that project aqueous methylmercury monitoring thresholds should be set to 0.06 ng/L, but ideally should be less than 0.06 ng/L.
Chapter 9/page 115	The EIR identifies mercury water quality impacts due to compensatory mitigation from creating tidal habitats (i.e., tidal wetlands). In the Delta Mercury Control Program review, tidal wetlands are estimated to be a sink of methylmercury but other wetlands (seasonal) are a source. Creation of other wetland habitat types for compensatory mitigation should also be included in Mitigation Measure WQ-6 to address the potential mercury impact from the other wetland habitats.
Chapter 9/page 115	The Central Valley Regional Water Quality Control Board should review the Mercury Management and Monitoring Plan, Site-Specific Mercury Management Plans, and Site-Specific Monitoring and Adaptive Management Plans prior to finalization.
Chapter 9/page 118	The discussion of sediment mobilization should be updated to include Delta waterways as follows: "viii. Control sediment mobilization into the tidal habitat and Delta waterways if particulates or sediment is determined to be a key source of mercury (California Department of Water Resources et al. 2020:7-1).
9.1.4	The typographical error in table 9-3 should be corrected: "XDSe]"
9.3.3.2	The typographical error should be corrected: "over excavation" instead of "overexcitation"
9.3.3.2	A comparison of the on-site treatment and storage capacities versus the volume of water from dewatering (e.g., Delta Conveyance Design Construction Authority technical memo 056 CE-H), decant water from reusable tunnel material (RTM), and stormwater runoff should be provided to support the EIR conclusion that construction of project alternatives would not increase peak flow rates (discussed in section 3.4.15.5) and result in discharges that substantially degrade water quality or adversely affect any beneficial uses.

Chapter 12 - Fish and Aquatic Resources

Section/page/line/general	Comments
12.3.1.3	The Draft EIR assesses operational effects with both qualitative and quantitative methods. The Draft EIR uses a 5% difference as a threshold for significant impacts from the proposed Project. However, the EIR does not provide how the information derived from the qualitative and quantitative methods was combined and weighted to produce the final determination of "significant" or "less than significant" impacts. This should be explained.
12.3.3.2/Impact AQUA-1 Page 12-56	This section mentions that turbidity during in-water construction activities could exceed 25-75 nephelometric turbidity units (NTU). Both the Central Valley and San Francisco Bay Regional Water Board Basin Plans have turbidity water quality objectives based on background turbidity levels. This analysis should include a discussion of existing background turbidity levels at the construction sites to determine whether an increase to 25-75 NTU would potentially violate the Basin Plan (and therefore constitute a significant impact).
12.3.3.2; Impact AQUA-2, 3, 4, and 5 (Salmonids)	The Draft EIR identifies various factors for the near-field effects (entrainment, impingement, and predation) at the north Delta intakes that would affect migrating juvenile salmonids in Impact-AQUA 2 (pages 12-74 through 12-92). However, it does not provide any quantitative estimates of the near-field impacts on salmonid populations or explain how much of the near-field effects were integrated in the overall impact assessment. The Draft EIR concludes that the near-field effects on fish would be minimal or limited based on a qualitative assessment using data collected from different locations and/or different rivers. It would be reasonable for the EIR to incorporate a range of population-level impacts (e.g., 5% or 10% additional mortality) to account for the potential near-field effects on salmonids and other fish species migrating through or inhabiting areas near the north Delta intakes.

12.3.3.2/page 12-77	The Draft EIR identifies that juvenile salmonids primarily migrate in the thalweg or on the outside of bends, which would keep them away from the intakes and screens. However, the EIR acknowledges that sometimes juvenile salmon occupy the inside of bends when they are holding. The Project should include specific provisions for continual monitoring, evaluation, and adaptive management to ensure that entrainment, impingement, and other impacts do not occur from Project diversions.
12.3.3.2/ page 12-79/ Table 12-17	This table should be updated to provide clarity. The table shows 5.9% to 37.1 % of Sacramento River at Freeport flows being diverted at Intake C, but it is not clear what flow is being referred to. Further, Model Runs 5B, 5C, and 5D show that up to 29%, 36%, and 60% of river flows (mean daily flow of 18,000 cfs), respectively, would be diverted depending on the tidal conditions within a single day. The EIR should describe whether such conditions represent realistic operational outcomes; if it does, the impacts of operations under such highly varying hydrologic conditions and a mitigation strategy should be described in the EIR.
12.3.3.2/ pages 12-108 to 12-109/ Table 12-33	Significant negative impacts to riparian and wetland bench habitats are expected under the proposed project (Alternative 5) during winter- and spring-time in all year types on the Sacramento River below the north Delta intakes, including on Sutter and Steamboat Sloughs. This habitat type is important for native resident and migratory fish species to provide food and cover. This occurs during a critical time when populations are naturally stressed and need prime habitat and can significantly impact populations. The EIR should further evaluate these potential impacts.
12.3.3.2/ Tables 12-38, 12-39, 12-43	The IOS model shows (Table 12-38) a 9 to 11% reduction (Alternative 5) in the escapement of winter-run Chinook salmon. The OBAN model (Table 12-43) suggests winter-run Chinook salmon escapement could be reduced by up to 36% (Alternative 5 with 10% loss at the north Delta Intakes). Table 12-39 shows that the through-Delta survival of juvenile winter-run Chinook salmon would be significantly reduced during low water years (below normal, dry, and critically dry) when temperature management is challenging on the upper Sacramento and Egg To Fry survival is typically low (See 2021 JPE Letter from NMFS). Given the current status of winter-run

	Chinook salmon, the EIR should further analyze the project impacts during this sensitive life stage and provide mitigation for impacts.
12.3.3.2/ page 12-179 Line 32	The effects analysis of sediment entrainment resulting from proposed Project operation identifies a 4 to 7% expected reduction in sediment reaching the Delta. The conclusion is made that this is a less than significant impact and that modeled future increases in sediment load would be enough to offset these losses. The proposed Project should include mitigation measures to address losses of sediment if the expected increases do not occur or should identify that this could be a significant impact.
12.3.3.2/ page 12-208/ Table 12-157	Significant net decreases in White Sturgeon Year-Class strength are presented under all alternatives. The less than significant impact conclusion should be explained given this appears to represent a significant impact.
12.3.3.2/ page 12-220/ Lines 7-9	The analysis of starry-flounder states that the impacts are close to the threshold of significance (5%) and that there is uncertainty in such statistical relationships when assessing relatively small, operations-related differences. The Bay Otter Trawl Abundance Indices for starry flounder (Table 12-173) would be reduced by 5% and 6% in below normal and above normal water years, respectively, under the proposed Project (Alternative 5). However, the Draft EIR concludes the project impacts would be less than significant citing uncertainty and geographic distribution of the fish. This impact conclusion should be further supported.
Impact AQUA-2/Appendix 12B	The Draft EIR used the Winter-run Chinook Salmon Life Cycle Model and provided data in Chapter 12, but the description of the model is not provided in Appendix 12B. The EIR should be updated accordingly.

Chapter 16 - Recreation

Section/page/line/general	Comments

General	The analysis of recreation impacts of the proposed Project in the Draft EIR was limited to determining whether the impact of construction would cause deterioration of existing regional parks and recreational facilities by increasing their use, and whether the Project would require building new recreational facilities in ways that could harm the environment. There is minimal analysis of whether recreation will be obstructed in other ways, which should be included.
General	Chapter 16 of the Draft EIR does not discuss the potential recreation impacts (e.g., boating) occurring at the intake construction sites. The Final EIR should note the estimated surface area of water at the intake facilities that will be inaccessible to recreational boaters during construction, operation, and maintenance. Any potential changes to or hinderance of boat passage at the intakes should be identified.

Chapter 17 - Socioeconomics

Section/page/line/general	Comments
17.3.3.5	The Draft EIR notes that impacts on local tourism and recreation revenue are likely to be minimal, but also that construction near established recreational facilities will occur for up to 24 hours per day for a period of several years, disrupting recreation with undesirable visuals, loud noises, increased congestion, and restricted boating. Impacts on recreation-oriented activities should be assessed to determine if construction will disrupt these activities in ways other than making them inaccessible.
17.3.4	Recently passed AB 2011 is expected to decrease barriers to building multi-family housing and increase housing supply, particularly in regions undergoing economic transitions with underutilized commercial areas. This information should be included in Table 17-28 and the analysis in the EIR.

Chapter 18 - Aesthetics and Visual Resources

Section/page/line/general	Comments

General	Aesthetic impacts of the project are primarily considered from terrestrial perspectives. The EIR should evaluate potential scenic impacts on or in the river or explain why the project is unlikely to affect riverine views.

Chapter 19 - Cultural Resources

Section/page/line/general	Comments
General	While impacts on fish populations are analyzed in Chapter 12, the potential impacts on the ability of these fish populations to support cultural practices is not discussed. The EIR should analyze these potential impacts or explain why they will not exist.

Chapter 32 - Tribal Cultural Resources

Section/page/line/general	Comments
Chapter 32/page 32-45	The Draft EIR states: "Project impacts would remain significant and unavoidable for all project alternatives after implementation of Mitigation Measures TCR-1, TCR-2, and TCR-3, and TCR-4 because complete avoidance or protection is unlikely and operations and maintenance of the intakes and tunnels may still materially impair the Tribal experience of the spiritual qualities of the Delta Tribal Cultural Landscape (TCL) even with the efforts to repair or restore the Tribal experience." Ongoing consultation with tribes should occur during all planning and implementation stages to minimize overall and seasonal impacts on tribal Lifeways, such as in-water ceremonies and subsistence fishing activities.
Chapter 32/page 3	The analysis of potential impacts in the Draft EIR shows that less emphasis has been placed on assessing second-order consequences of the proposed Project which are more difficult to quantify, such as changes to the ability of indigenous and low-income Delta residents to use small-scale fishing to supplement their diet.

	Tribes and Delta communities rely on subsistence fishing throughout the year and require adequate fisheries and access to fishing locations. Construction and project operations should consider and limit, to the fullest extent possible, adverse effects on subsistence and Tribal subsistence fishing activities. Limiting impacts could include engaging in Tribal consultations early in planning processes, providing information about in-water construction and maintenance work in ways that reach subsistence anglers, and monitoring the effects of the project on fish species commonly caught for human consumption. For the latter two examples, the Environmental Commitments to provide notification of construction and maintenance activities (EC-16) and for construction best management practices for biological resources (EC-14) could be expanded to address communication and fisheries relied upon by subsistence anglers and Tribes.